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Sheer techno-love!

I had a moment of pure bliss recently, when I stood in front of a computer monitor and controlled objects on the screen, merely by moving my hands and arms about. I was able to reach out, grab representations of molecules and move them across the computer screen. Talk about an interactive user experience!

The venue was a Comdex/Full press briefing, and IBM Corp. was showing off research that saw voice input combined with movement. Staff researcher Mark Lazzarini stood about 10 feet in front of a large computer screen with a small camera mounted over it. He called up applications using voice commands. He was also able to point to specific objects, and say "Make that bigger," or "Make that blue" (They didn't let me play with the microphone.) Another example showed a picture of the Mars landscape. As Lazzarini walked closer to the screen, he moved deeper into the terrain. Turning right turned the view right-wards, and stepping back took him farther away. IBM says big business like oil and pharmaceutical industries, see applications for the visualization technology as it matures.

This is cool stuff. Now I'm all emotionally geared up to sit at my PC and move the cursor about with a gesture, or relocate text or graphics with the wave of a fingertip. Alas, this technology won't be ubiquitous for a few years yet.

IBM is just one of a number of companies doing significant studies into future technologies. At the company's Almaden Research Center in San Jose, Calif., researchers are working away at squeezing more data into less storage space. Indeed, the amount of data that can fit into one square inch has been growing at a compounded rate of 60 per cent per year. To find out, scientists are experimenting with holographic storage, and even studying the possibility of storing data directly with atoms. For an in-depth examination of storage technologies and markets, see Associate Editor Jeff Evans's feature, "Data Storage Technology Runs to Edge Place With Explosive Demands," page 30.

A few years ago, "geek" was something of an insult. Today well-provanted geeks are doing amazing things with technology, and loving it. A little while back, one such young man tried to get to me, by

wagging. "You don't really love technology," "No, no, I DO!" I protested vigorously, waving off some of my favorite tech-topics. But the fact is, while I find some technologies to be mind-blowing, others make my eyes glaze over.

And isn't it the same with your customers? There are among your clients, those who will get a warm glow at the mere mention of ISMMS in their PC. Others are just looking for the most basic word processing/spreadsheet functionality that the PC enables (See, "The Super-Slacker," page 32 for a look at today's power-packed office productivity tools).

But good business is all about giving your customers what they want. For suggestions on keeping the spark wars with your clients, see this issue's Marketing column — "Building Customer Relationships," page 50.

Here at Canadian Computer Wholesaler, we try to bring you insightful, detailed coverage of current and coming technologies that will help you in your business buying and selling decisions. This issue our Lab Test Editors Steve Hinkels and Tim Bingham-Wallis take a very close look at 25 different notebooks. Check out page 36, for reviews of these very key companions to your systems.

Write Us

We love to hear your feedback on our coverage and suggestions for future topics. For example, the article on software piracy this issue (page 14), was a direct result of a reader emailing us his story.

What are your triumphs, concerns, or pet peeves? Drop us a line at general@ccw.com, or visit our Web site at <http://www.ccwmag.com>.

Have a very happy, and profitable New Year. ☺

Grace Carleton
Editor

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Canadian Computer Wholesaler

Publisher	David Katz
Associate Publishers	Judy Prange Russ Singh Khosla Grace Carleton Ignacio Provenza et al
Editor	Jeff Evans
Associate Editor	Grace Carleton
Contributing Writers	Joel Winton Graham Stewart Tim Bingham-Wallis Alex Hoo Douglas Gray Steve Hinkels Stephen Hinkels Mona Kerr Dan McLean David Tinkler Paul Worthing Alan Stromm Shelly Ho Kara Hartung Rene Keller
Key Account Manager (East)	Tim Wong (416) 491-1000 ext. 202
Key Account Manager (West)	Bernie Layman (604) 491-1000 ext. 202
Account Managers	Monika Miller (416) 491-1000 ext. 202 Frank Houston (416) 491-1000 ext. 202 Christine McPhee Francis Ann Scott Ross Kim Jewison Keri Lapan Chan Li Ding
Controller	Christine McPhee
Accounting	Francis Ann
Circulation	Scott Ross
Finance	Kim Jewison
Facilities	Keri Lapan Chan Li Ding

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Toronto Office

Suite 202 - 70 Adelaide Ave.
Toronto, Ont. Canada M5H 1X8
Tel. (416) 592-4400
Fax. (416) 592-1000

Vancouver Office

Suite 503-425 Canal St.
Vancouver, B.C. Canada V6B 6C1
Tel. (604) 425-2200
Fax. (604) 576-3500

Beijing Office

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INDUSTRY FLASH!

Microsoft suffers legal defeat over browser

(NBT) — Although Microsoft Corp. is putting a positive spin on U.S. District Judge Thomas Penfield Jackson's temporary injunction that prevents Microsoft from requiring computer makers who license its Windows 95 computer operating software to also accept its Internet Explorer browser, the decision is a clear defeat for the software giant, according to antitrust lawyers.

In his ruling, Judge Jackson agreed with the U.S. Justice Department and said Microsoft's "tether" clause and threat "from the practice of limiting the use of any Microsoft personal computer operating system software... on the

condition, express or implied, that the licensee also license and preinstall any Microsoft Internet browser software pending further order of this court."

The temporary injunction does allow Microsoft to continue to offer to original equipment manufacturers (OEMs) the full Windows 95 product, which includes Microsoft Internet Explorer, as long as each OEM has the option of installing the portion of Windows 95 that does not include Internet Explorer 3.0 or 4.0 files.

While issuing the cease and desist order, Judge Jackson also ruled with Microsoft on other issues, including denying the Justice Department's request to fine the company US\$1 million a day for violating a 1993 antitrust agreement.

This is just a temporary injunction against Microsoft, but temporary can be a long time, especially considering Microsoft's Windows 98 has been expected to handle the Internet Explorer even more closely with the operating system.

**Voice recognition is HOT**

The speech market is heating up. At Comdex/Fall in Las Vegas, three major developers of speech recognition software demonstrated new continuous speech products.

IBM Corp. is shipping the ViaVoice Gold continuous speech software (US\$149), which handles both voice-dictation and computer control via voice commands. A voice-enabled version of Microsoft's Internet Explorer is included, to allow for voice-controlled Web browsing.

Currently shipping its Dragon NaturallySpeaking, from Newton, Mass.-based Dragon Systems Inc. Supporting continuous speech, the company claims users can input up to 160 words per minute through voice, with 99 per cent accuracy. A version for home users and small business is priced at US\$229. A better "Desktop" edition for corporate users is priced at US\$695.

Belmont-based Lernout & Hauspie Speech Products (L&H) plans to ship Voice Xpress only this year. The product supports both continuous speech dictation and the ability to control the computer with voice commands. Microsoft Corp. recently invested US\$45 million in this company.

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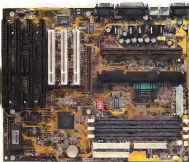
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Tenex Data signs deal with StorageTek Canada

Tenex Data has signed a deal to become the Canadian distributor for StorageTek Canada products.

Under this agreement, Tenex Data will be offering the StorageTek STK V100 DLT libraries and 910a family of disk drives to resellers across Canada.

Tenex Data is at (416) 291-5894.

Results sells tool for resellers

Markham, Ont.-based Results International Sales Automation Systems is selling a quotation management system aimed at computer resellers, called Quote 5.0.

The quotation management system is designed to quickly generate accurate quotations as part of the business process, with tight integration with contact management and accounting functions.

The product creates, manages and closes sales quotations. It automates a company's price book and customer lists to provide instant access to information and increase efficiency, says Results.

Including software, configuration, set-up and training, the product starts at about US\$10,000. That can also include the customer management piece — currently the Masterpiece product. And some of the training can be done remotely, over the Internet, explained Christopher Whittier, manager of business development for Results International. ■



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We welcome your ideas regarding news and feature topics for Canadian Computer Wholesaler. Feel free to contact the editors directly with your suggestions.

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Please write:

The Editor, Canadian Computer Wholesaler
298, 89 Adelaide Ave., Toronto, Ontario M5X 1J8
Tel. (416) 595-8474
Email: ccw@ccw.ca

Editor: Grace Casselman
Cell: (416) 263-7900
Fax: (416) 263-7922 E-mail: grace@netcom.ca

Associate Editor: Jeff Evans
Cell: (416) 595-8474
Fax: (416) 595-8474 E-mail: jpe@netcom.ca

Contrib: Steve Hefels
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The Price For Principles

Sure, respecting software licences and copyright is the right thing to do. But what happens when your customers demand illegal software copying, or no deal? It happens. Just ask Kitchener, Ont.'s Stefan Myles about the moral high ground versus profitability.

By Paul Winkberg

What do you do when your client insists upon the acceptance of something illegal as part of a contract?

In Stefan Myles' case it meant pulling out of the business as fast as possible.

A self-described "computer guy," the Kitchener, Ont.-based VAR normally purchases products on behalf of a customer and then configures them together as part of a network. For the most part he does office automation and his target group tends to be non-for-profit organizations and small businesses. "I serve the lower budget end of the market that can't afford the \$100 to \$200-a-hour find some computer change."

In a bit of a departure, Myles says he recently became involved with a major project at an engineering firm — a multi-branch business in southwestern Ontario, which required some networking assistance. As it turned out, because of some difficulty connecting two of the workstations, he began as one of the owner installed hardware and software in order to avoid any further expense. "I wouldn't have conflicts with video drivers and network cards if I had a list. I could have the answers ahead of time."

Unfortunately, Myles started to notice that all the usual members for the operating system and major applications — office

packages it was providing for all of the computers in the network, thereby breaking contractual agreements with vendors that stipulate one licensed copy per machine. "They were very matter-of-fact about it and more annoyed with me, that I couldn't continue on with the installation."

As a Microsoft OEM authorized dealer, Myles did not want to jeopardize his legal position and "be a party to a crime." But the customer's response was that it was entirely his problem. "It was all of a sudden my fault. I had done something wrong. They were telling me I had signed a contract with them, that produced my contract with Microsoft."

So he withdrew from the situation, and says he lost thousands of dollars in potential work. If the copying issue had not come up, Myles says he might have eventually set up for his client an NT server, E-mail, and multiple Internet access. Subsequently, another reseller took on the job.

Since then, Myles is much more careful when considering similar projects. He says he intends to be upfront in future contracts about his requirement that the client fully respect software license agreements. "I am concerned for other resellers. There are a lot more people hanging their shingles out as computer consultants. Do they realize what

which cannot afford an IT department, where a software policy is more likely to be established. In the last three years in Canada, the level of piracy has dropped, but "the actual lost revenues a piracy has gone up," he notes.

Lawyer Barry Sookman, a partner with McCarthy Tétrault, in Toronto, said to have better protected himself going into the job, Myles should have had a clause included in his contract that would have indemnified him against being connected with any unenforced event. Myles has since added this into his contracts.

Microsoft's Dupuis is also a member of the Canadian Alliance Against Software Theft (CAAST). CAAST has made some major efforts on the anti-piracy education front (which have been successful, if late). However, Dupuis says that in 1996 in Canada, 42 out of 100 word processing packages in use were pirated, compared to 27 in the U.S. in the same year. "It is not a question of Americans being more law-abiding," he suggests, but a matter of U.S. groups like the Business Software Alliance reacting with a "more aggressive and vocal" approach towards violators, as well as a greater preponderance towards litigation south of the border.

Dupuis is also adamant that there are no exceptions to the requirement at Microsoft that it is one licensed copy per machine, even in scenarios when an individual might be using one PC at work and another at home for his job. "He must pay for two copies."

Software vendors like Microsoft in this country have had no difficulty obtaining a judge's permission for a search of a party's premises if there is a strong belief that illegal copying of their applications is taking place, says Michael Eizen, a Toronto lawyer with Morris/Ross/Lidgett. "The civil search and seizure order is most likely in connection with intellectual property disputes." ■

Paul Winkberg is a Toronto-based journalist who specializes in high-technology reporting. He can be reached at pwink@jwlinking.com.

"I am concerned for other resellers... Do they realize what kind of trouble they can get into, especially in a large-scale situation?"

— Stefan Myles

suites and vertical applications — were the same, Myles said. "I didn't think this was too unusual, as often software is installed on multiple machines from one set of disks or CDs or a network share, with the boxes and licenses left exposed on a shelf." However, when he asked for the other license numbers to update the list for the records, it turned out that the company was using one copy of each software

kind of trouble they can get into, especially in a large-scale situation?"

Norm Dupuis, anti-piracy marketing manager for Microsoft Canada says he has the sense that violations of licensing agreements are more likely to occur in smaller organizations



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Pushing The Envelope On PC Entertainment

by Paul Weisberg

What will it take to make the computer a truly fun device and not just a boring business productivity tool?

Multimedia products are already available, and often relatively inexpensive — games software, for example. But entertainment on the PC is still very much an after-thought for most consumers. PCs, even as they dip below \$2,000 at the low-end, are still not expensive for casual use, compared to other consumer electronics products like the \$200 VCR.

The latest Pentium machines do feature three-dimensional graphics capabilities in the processor, but those systems are particularly game-prohibitive for the average consumer. On the other hand, some technologies like the digital video disk, more visually appealing than the VCR in the presentation of movies on the PC, are not ready for market acceptance because of competing standards and insufficient titles.

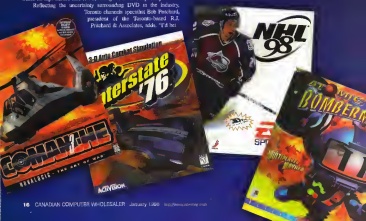
Richard Moschese, industry analyst and president of Toronto-based Moschese & Associates Inc., also figures Microsoft's delay in the introduction of the next version of its Windows operating system, which he says should take full advantage of DVD's capability.

Reflecting the uncertainty surrounding DVD in the industry, Toronto channel specialist Bob Prebich, president of the Toronto-based R.J. Prebich & Associates, adds, "I'd bet

the knee change in my pocket that DVD will finally move the PC into the entertainment market."

There is already a lively games software market, where successful vendors meet the available demand for more realism and special effects in new adventure and simulation titles from a largely young male clientele. Games software represents 50 per cent of the entertainment PC products sold, says John Traynor, national retail sales and marketing manager for the Winnipeg, Ont.-based Microsoft Canada Ltd. Also, 30 per cent of the games sales drive 80 percent of the games business, he notes. In terms of the after-thought argument, he says: "Very few people buy PCs to play (Microsoft) Flight Simulator, but that hasn't stopped it from being a top-seller. The challenge is to find new users for the PC."

IBM Canada Ltd.'s Active marketing manager Ray Hoven defines two types of consumers of PCs: the "Envelopers" who is seeking the latest in technology and the "progressive families" who are buying the systems for a whole bunch of reasons, including entertainment.



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Seasoned consumers, already using a PC for home office purposes or as an educational device for their children, "have gone through the learning curve and now they see using the technology for other things," says Rivers at Macrium. *See Journal 1104*

As the moment though, home PC sales are flat. Susan O'Dell, a Minneapolis, Minn.-based retail analyst and strategist of Service Dimensions Inc. says,

gists that the computer market is saturated already because all the people who need PCs and can afford them have purchased them.

Some rebound in the home market may be occurring now with a slightly improved economy.

analyst David Ryan at the Marketing Den, based at C. Nielsen & Co. of Canada. However, revenue for consumer PC purchases was down by 19 per cent in 1990 compared to 1989, he says, continuing that trend with the 1993-95 period when entertainment purchases appeared to be "crumbling."

Some major vendors like Toshiba are abandoning the consumer market entirely and sticking with the more reliable business buyer, notes Iyer. He has noticed that vendors bundle in the retail channel

are Windows-based software-of-interest, including communications programs, and are "open hardware-driven."

Nevertheless, Microsoft Canada has found that entertainment products continue to be a major draw in the retail channels, according to its survey of software purchasing decisions by about 4,000 consumers in 45 different retail outlets across Canada between April 1996 and April 1997.

Forty-three per cent of those interviewed stated they were shopping for an entertainment or games product, compared to 23 per cent can seeking business management tools, 19 per cent for home productivity/finance and 17 per cent for children's software (covering both education and entertainment or education). These are averages — in some stores entertainment is up as high as 70 per cent of the purchases.

Microsoft confirms that 81 per cent of the all software buyers are male, compared to 19 per cent who are female. For entertainment alone, it is slightly higher with 87 of the purchases done by males, compared to 13 per cent for women.

Businesses/agencies continue to attract a young male demographic, with only 57 per cent of the consumers 35 years or older. In contrast, the average consumer of a business management application is 35 to 34 years of age, which may speak volumes about which generation has the good jobs these days. Also, women who shop for entertainment/games tend to be 35 years or older.

Macreoli's Traynor suggests that men buy for themselves while women are shopping on behalf of someone else, presumably for a younger person. In terms of children's software, the number of male purchasers drops to 69 percent, while women buyers climb up to 31 percent.

The "mental leap" to accept the losses on the trade that, rapid turnover of products in specific areas on the shelf is made, significant over the long haul than short-term profit margins on isolated sales. Such turnover could range from 12 to 24 times for an item in a single week, he suggests.

Trypan cites the common problem of shoppers running out of cash or popular items as a result of markets planning and positioning of software products. In its survey of reasons by consumers for not buying anything, Microsoft Canada found that 48 per cent of shoppers walked out of a store because they could not find what they are looking for, versus 14 per cent who cited chaotic factors with the pricing, 10 per cent who were short on inventory and 13% who were upset with the service.

Patrick Meehan, research director at the Stamford, Conn.-based Gartner Group Inc. notes that some manufacturers have tried to make PCs more beautiful in order to make them more appealing for a home environment. But that is merely "cosmetic," he says.

Moohan suggests that "the line with the monster has to be broken down" in terms of design and then "apportioned" into various application functions before new possibilities can arise. Already, the bits and pieces of the strand are in place, blurring the boundaries between business and non-business use, such as Web TV, handheld computers and digital cameras. ☐

Paul Whiting is a Toronto-based journalist who specializes in high-tech industry reporting. He can be reached at patrick@whiting.com.



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DATA STORAGE TECHNOLOGY

Racing to Keep Pace With Exploding Demands

by Jeff Evans

Storage technology is one of the fundamental building blocks of computing, but it often tends to be ignored, particularly at the retail PC level. For the average desktop PC, it often seems that storage is a no-brainer: a floppy drive and a hard drive. What could be simpler? Well, behind the commodity, "point-of-the-week" mentality, storage technology is one of the most vibrant and vital segments of the computer industry.

Areas of particular opportunity for retailers include mass storage backup systems such as Image's Jaz and Zip drives, Fujitsu's Magneto-Optical (MO) drives, and new high-capacity floppy drive formats such as the LS-120. DVD technology is still in its early stages, and has some room to mature, particularly around re-writable disk compatibility with playback-only technology.

A Place For Everything

The markets for storage technologies can be looked at either in terms of technology (hard drive, tape, CD-ROM, solid state), or by core and application category (desktop PC, notebook PC, server/mainframe).

Plain Vanilla

The basic PC, whether Windows or Mac, comes with a 3.5-inch floppy drive, and, as late 1997, at least a 1.2GB hard drive. According to Neil Robertson, the marketing manager for storage products for Fujitsu Canada Inc., the Enhanced IDE format of hard drive completely dominates the mainstream desktop PC market, and the typical hard drive size tops out at about 6.4GB (even to next to 8.0GB). All hard drive vendors sell bare bones hard drive kits to PC makers, either directly, or through distributors. Some manufacturers also do retail hard drive packaging for the PC upgrade market. (Fujitsu does this in the U.S. market, but not in Canada.)

The floppy drive market is a low-margin commodity category, and Fujitsu is one of the major suppliers in Canada, selling several hundred thousand units each year.

Faster And Bigger

At the recent Comdex in Las Vegas, some high-capacity hard drives, up to 47GB, were shown by Seagate Technology Inc. (For information on the Elite 4), see <http://www.seagate.com/elite/elite4.shtml> aimed at the server or high-end workstation market. Seagate unveiled its 10,000 rpm super fast Cheetah drives and Fujitsu claims that its own 10,000 rpm drive will be coming in early 1998.

SCSI drives, very common on smaller desktop PCs, are standard on servers and "personal workstation" PCs. Typically, new high performance hard drives appear in SCSI variants first, as high-end "power users" are more willing to pay the instantly higher prices. As mass production, products and prices



begins to drop, then IDE/ATA versions for the mainstream desktop market are introduced.

Quantum Corp. (<http://www.quantum.com>), a USB 3.3 billion hard drive maker, is also a major innovator in high capacity drives, and Micropolis (<http://www.micropolis.com>) was an early leader in higher capacity hard drives with its second generation Toranash's 9.1GB and 18.2GB models.

The run up in hard drive size has been rapid, and according to industry projections, steady improvement will be possible for about another 10 or 12 years, until the physical limitations of magnetic media are reached, and other more exotic storage technologies have to be adopted.

New Floppies

The traditional 3.5-inch floppy is still almost universal, although the LS 120 floppy format, which has a capacity of 120MB and is backwards-compatible with high-density floppies, is gaining a degree of acceptance from PC makers such as Compaq, Ales, Sony and Fujitsu (<http://www.sony.com>, and <http://www.fujitsu.com>) have jointly announced the HiFD, a new 3.5-inch 200MB floppy system.



Iomega: In A Class By Itself

Iomega, which for many years was an also-ran in the removable storage media market, trailing behind longtime leader SyQuest, has achieved an amazing reversal of its status in the storage market. With a combination of great products like the Zip and the Jaz cartridge drives, combined with brilliant marketing, Iomega has become the market leader in removable mass storage. At last year's FallComdex, Iomega maintained its momentum with new products such as its 2GB version of the Jaz drive (backwards compatible with the 1GB version) and the ultra-compact removable CIB device. (<http://www.iomega.com>)

Solid State And Flash Storage

One alternative to hard drives and cartridge storage media is storage using memory chips. Quantum is a leader in solid state 'drives,' which though much more expensive than traditional disk drive, are also much higher in performance. Quantum's Flashmate drives have a capacity up to 900MB, which is a lot of memory chips on one card. At the lower end, a whole new world of portable, handheld computing is being facilitated by the emergence of flash memory cards, which can be used in digital cameras, notebook and handheld PCs to allow for greater data storage and transferring.

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Compact Disk Recordable (CD-R) And DVD

Devices that allow PC end-users to write their own CD-ROM disks have dropped in price to well under \$1,000, with blank recordable disks costing less than \$10. Not incidentally, just when this storage medium seemed poised to

become quite widespread, the higher capacity DVD format has emerged, along with a number of competing re-writable DVD formats. The result is that compatibility issues are up in the air, until the market and the competing consortiums make which format will become standard and compatible. In the meantime, CD-R products such as the Synchrotec Technologies (<http://www.synchrotec.com>) Maestro CD-R 2x60R have reached a high degree of maturity in terms of ease of installation and use. Compro (<http://www.compro.com>) makes a 4X CD duplicator that comes with an internal hard drive and CD reader, as well as the recording drive, and which can be used either as a standalone device, or connected to a PC.

**CD-ROM And DVD-ROM Drives**

The original single-speed CD-ROM drives had a read speed of 150KB/sec. Current CD-ROM drives have speeds of "between eight and 32 times that rate. Down at the 8X end of the spectrum, read prices range as low as \$50. The 24X and 32X speed models still have some margin potential, but CD-ROM drive manufacturers such as Creative Networks Inc. (<http://www.creative.com>) are in the process of displacing CD-ROM drive capacity in their manufacturing plans, anticipating that 50 per cent of drive products will be in DVD format by the middle of 1998.

Mainframe And Workstation

Above the PC level, many of the major server and mainframe-related companies offer high end storage library solutions. These include tape, MO, hard drive array and CD-ROM robot library systems from vendors such as HP and IBM.

Traditionally, these systems run under UNIX or some other high-level operating system, but Windows NT storage library solutions are rapidly being developed as well. According to IBM Corp. (<http://www.ibm.com/storage>), "Industry analysts project the open systems (UNIX) storage business to exceed \$12.3 billion in revenue by 2000."

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to look to at the high end, where vendors such as StorageTek (<http://www.storagetek.com>) offer tape backup systems with over a terabyte (1,000GB gigabytes) of capacity, and transfer rates of up to 144GB/hour.

At the high end of the storage market, NT-based solutions from

vendors such as Digital and Compaq are expected to grow rapidly in market share, using the new Microsoft clustering technology to support large data storage warehouses. New, high-speed technologies such as fibre channel architecture (which allows data transfer within a server at rates of up to 10-Mbps) will become more common, as will as innovations such as Serial Storage Architecture (SSA) which will increase the capacity of multi-server networks.

What's New In Storage?

There are always new storage formats being rolled out, in the hope that the market will see their usefulness, and 1997 was particularly rich in new products. The ORB, from Castleswood Systems, (<http://www.castleswoodsystems.com>) is a magneto-resistive drive, which creates 2.16GB disks at a cost of US\$199 for the drive and US\$29.95 for the disks.

Windows NT And Mass Storage

One of the oddities of Windows NT has been that even as that operating system has made spectacular progress in the server market, there is still not an integrated data defragmentation utility for NT. The big winner from this lapse is Executive Software Inc. (<http://www.execsoft.com>), whose Diskkeeper for NT is a 'must-have' third-party utility for virtually any NT system. Microsoft will include a licensed, stripped down version of Diskkeeper (similar to the test version available from Executive Software via download from the Web) in its upcoming release of NT 5.0.

The Network Is The Hard Drive?

Just when the PC is becoming easier and cheaper to manage in a business environment, an attempt is being made to sell big business on the idea of the Network Computer (NC), typically a diskless computer that will run Java software, or, in emulation, Windows applications. In the case of the NC, the old saying 'the network is the computer' translates into 'the server is your hard drive'.

In many cases, the NC's lower cost of ownership will make it attractive for limited ranges of applications, but in other cases, questions of local desktop storage and network bandwidth (not to mention user performance for a full featured, flexible PC) may reduce enthusiasm over the NC. Diskless NCs may not very popular, at least initially, due to lack of a local disk. This makes them very dependent on the network.

Best Bets?

The volume storage products at the retail level in 1996 may include

- Image's entire product line,
- hard drives with over 3GB in storage,
- flash memory cards for digital cameras, and,
- high-speed CD-ROM upgrades (which may include replacement DVD drives).

Many other storage products may offer lower-volume but higher margin opportunities (such as MD drives, for applications where the need for durability offsets the higher price) to the reseller who is prepared to research the storage market for its many, varied, and rapidly shifting facets. ■

Jeff Evans is Associate Editor of Canadian Computer Wholesaler. He can be reached at jeff@ccwn.com

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Storage Research: The Trials And Triumphs

Researchers at IBM face huge challenges to improve the skyrocketing storage needs of the information age.

by Simon Sturges

Consider the amount of data a Revenue 500 company had to store in 1990, on average — about 1GB. Then, for a staggering thought, ponder the fact that by the year 2000, the average Revenue 500 organization's storage needs will have grown to 60,000 or 70,000 times that, up to 70 terabytes (TB).

That's according to statistics compiled by IBM and other market research organizations, and Jerry Beasel, marketing manager, large systems storage, Storage Systems Division at IBM Corp., during a recent briefing session in San Jose, Calif. "We'll ship more gigabytes this quarter than any other quarter," he said.

IBM should indeed know about storage, planning to have a US\$3.2 billion capital investment in the storage business. About 500 of IBM's 2,800 technology researchers are devoted to storage-related matters. And Frank Elliaz, vice-president, worldwide market operations for IBM storage systems division, said 10 to 12 per cent of the company's US\$275 billion business is attributable to storage revenues. (According to market research firm International Data Corp., IBM is the revenue leader worldwide in storage products.)

And while we hear a lot about Moore's law of growth in microprocessor speeds, it seems the development race in computer storage are none too chilly, either. IBM says prior to 1988, the amount of bit that could be stored in a square inch of storage medium grew 30 per cent annually. But with the introduction of magnetoresistive technology in storage, that growth rate has jumped to an impressive 60 per cent, and held. And while capacity has been increasing, costs are coming down. In an highest-end tape products, IBM claims to be selling storage at less than one (U.S.) cent per megabyte.

On the desktop front, IBM has just started shipping a 16,000 hard drive. For those looking to transfer this, consider eight hours

of full-motion video. (IBM also compares the space to 16 pickup trucks full of printed information.)

The technology behind that drive is significant, as it incorporates an enhancement — Giant Magnetoresistance (GMR) heads. By the year 2001, IBM says that GMR technology will lead to packing in 10 billion bits per square inch on the hard drive "disk," which is called a platter. By 2004, that should be 40 billion bits, if current growth rates continue, says the company. (Note, IBM's new Travelstar 6225 portable notebook drive boasts three billion bits per square inch in that 4-1/2B product.)

In the simplest terms, IBM says its GMR heads are more sensitive to magnetic fields, from

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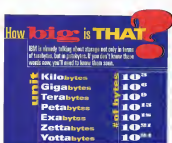
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the platter. This means more bits can be stored in less space, as the heads can better read the signals. These fields are created by the "write" portion of the head, which passes over the bits on the platter, magnetizing them to occur in one direction or another, which translates to either a 0 or 1 — the binary information that the computer needs. The more sensitive QMR heads are needed to decode the bits that are crammed into smaller and smaller spaces.

IBM's scientists say the 60 per cent growth rate in storage capacity can only go so far using current materials and technologies. Hence, researchers are experimenting with radical storage means.

For example, that includes holographic storage. Instead of just recording data on a surface like a hard drive, it uses the entire thickness of a medium, such as a crystal. The writing is done by crossing two laser beams. According to IBM, holographic storage could store



as much as 12 times the capacity of today's biggest hard drives. Moreover, read rates are much quicker as well, and data integrity is greater by this method. IBM says holographic recording is "intrinsically parallel" allowing one page to be stored and read at a time, which is appealing for storing images. Data transfer rates are reportedly up to one gigabit per second.

Even more futuristic is the concept of "storing" data with atoms. In 1999, IBM researcher Don Eigler guarded news for creating 35 atoms stored on a nickel surface to spell "IBM" using a scanning tunneling

microscope (STM). According to IBM, the density of such storage is about one million gigabits per square inch. But while such storage is incredibly dense, efficient read/write capabilities are still lacking.

The eventual goal of such atom-level research, said John Best, director, IBM Almaden Research Center and IBM Research Division vice-president for storage, is to "build computational devices out of atoms" that as demands from the market increase, and as research continues, "it will eventually lead us to understanding what we need to do to build computing devices on that kind of scale."

By using an atomic force microscope (AFM) and a cantilever in contact with a rotating surface — think vinyl record and needle as an analogy — IBM scientists have recorded densities of 35 gigabits per square inch.

Sara Peck, director, end-user research at Toronto-based International Data Corp. (IDC) Ltd., said as users look to store voice, video and space-hungry images, storage needs will only increase. "The demand is insatiable; it's just a function of price." And he said IBM is "hard-core" about timing its research into viable marketable product.

"1998 is the year we're going to require significant more device space," said Gary Michels, president of Edmonton-based consulting firm Michels & Associates Inc., also citing voice and video applications. "2018 hard drives will look pretty small very quickly."

"The challenge of data is to cope with the growth and provide access, management, movement and security," said IBM's Elliott. "We're driven by customer requirements." ■

Gordon Carmichael is Editor of Canadian Computer Wholesaler. He can be reached at gordon@cancom.ca.

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Small Storage:

Will That Be Spinning Or Solid?

by David Tanaka



In your six-pound notebook, a 2.5-inch hard drive seems like a light and tidy bundle, but if your entire digital device weighs just a few ounces, you need another solution. This is the idea behind a couple of

new storage devices that we'll be seeing within a few months.

One of those is Ionaga's Clik drive. Think "hokey, I shook the Zip drive," and you've got the essence of the Clik. For starters, the cartridge measures 2 1/2 by 1 1/2 inches, and is less than one-tenth of an inch thick. The 16-gigabyte cartridge will hold 40MB of data.

Ionaga expects the Clik cartridge will sell at retail for less than US\$100 per unit. The drive itself — at least in the form Ionaga was recently showing — is about the same size as a mini-tape-recorder or cellular phone. It will likely sell for under US\$300. Clik should be available at retail by mid-1998.

However, the real target for the drive is the OEM market. Ionaga hopes to convince manufacturers of cellular phones, personal digital devices and digital cameras, that the Clik is a cost-effective alternative to those still-expensive RAM cards. Compared to \$18 for a 4MB Clik cartridge, CompactFlash cards are still around US\$100 — and that will buy just the 4MB variety. In my way of thinking, the Clik is a feasible intermediate step for small storage. The drive, embedded into a device like the digital camera, won't take up much space; will offer 40MB of storage per cartridge; and an affordable price.

I recently had an opportunity to test the Olympus DL200 digital camera. To make sure I had enough storage capacity, Olympus also loaned me three 4MB memory cards. As the camera's highest resolution, the cards would hold just 10 images each. So, after firing off the rough equivalent of a roll of 35-mm film, I was stuck. I had to go back to home base and download the images into my

computer before I could start shooting again. In a real-world scenario, it's just not realistic to expect that consumers would load up with more than a couple of these pricey cards.

However, if a digital camera came with a built-in Clik drive, I could see any consumer buying the cartridge in bulk. At US\$10 each, the drive are about the same price as a roll of film.

Of course, as a mechanical device, the Clik's power consumption will be relatively high and small as it is, it still requires more physical space on the camera or PDA than a memory card. That's why the long-term money saver with solid-state storage. And, like everything else in the business, solid-state storage is becoming stronger with time — and smaller too.

Sandisk Corp. has become one of the leading suppliers of memory cards, and has been signing a pile of OEM deals with digital camera and other electronic device manufacturers. Along with the memory cards in the standard Type II and Type III PC Card size, the company also has its CompactFlash line. These devices are about one-quarter the dimensions of a PC Card. Sandisk estimates that by the year 2000, it will have a CompactFlash device that will hold 500MB.

Audio equipment maker Uher Infomatics GmbH recently announced a tapeless audio recorder that uses the CompactFlash cards for storage. A 4MB memory card will store about one hour of voice recording, and the voice file can be downloaded into a PC. Uher looks ahead to a time when a user would download into the recorder, download the file into a computer, and have the file transcribed into ASCII text using voice-recognition software.

Sandisk's latest storage device in the MultiMediaCard, which the company claims is the world's smallest solid-state storage

Image Clik



device. The MultiMediaCard is 30 mm by 24 mm by 1.4 mm and weighs less than two grams. Production samples will be available in early 1998 with capacities of two, four, eight and 10MB. Sandisk estimates retail availability sometime in the second quarter of 1998. A 30MB version is being developed, and we may see it in 1999.

The application of these miniature cards is in the next generation of mobile communication devices, which may have an embedded CPU and an operating system like Windows CE. A database — the telephone directory for example — could be stored on a memory chip. And, as Sandisk points out, in this emerging era of smart phones, people will have access to all kinds of data, from news headlines to stock quotations to flight to airline schedules. All of this data could be stored on MultiMediaCard devices. The on-board memory would also add new capabilities to the communicator — perhaps as a voice recorder. ■

David Tanaka is a Vancouver-based journalist and Editor of *The Computer Paper*. He can be reached at david@cp.ca.



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The Super-Suites

Multi-application products provide greater functionality, but more complications, too

All for one and one for all — probably best characterizes the most significant trend in the development of workplace office productivity software tools these days. Convergence and integration are staples of the most successful products in this space today — a far cry from the strictly vertical workplace tools of the past.

Traditionally, office productivity applications were separate components that rarely provided interoperability. Each was designed to serve a particular environment. Worders designed tools, like workflows or imaging, as an effort to offer functions for niche business types.

But along come concepts like enterprise networking, the Internet, intranets and virtual companies, which drive demand for more integrated tools and collaboration features. Coupled with these headwinds, has been a move towards broadening out office productivity software tools to a wider base of users and providing integrated functions that address a continuing demand for information and data sharing between office productivity applications.

"What we're seeing now is more convergence in these product sets," said Marilynn Carr, director of work management services for consultants LGS Group Inc. in Toronto.

"Single vendors now have the entire range of possible tools which you may want to use, all within their own product suite, all of which can plug in and work together or work separately. Rather than before, having to go to a bunch of different vendors to purchase individual pieces, you can now buy one consolidated suite of products that will do virtually everything you need."



by Dan McLenn

Consider some of the most successful office productivity software sets currently on the market: Lotus SmartSuite, Microsoft Office 97 and Corel WordPerfect Suite all feature wordprocessors, spreadsheets, personal planners, presentation software and a variety of other collaborative office productivity applications, all in one package. Each of these can be used for both personal and workplace productivity. According to industry analysts, Microsoft Office claims the lion's share of the main market, and has emerged almost as a "standard" in the corporate world. Corel has seen some success in the retail space, as the lower priced offering is attractive to home and smaller business buyers.

According to a 1997 report by market research firm Computer Intelligence (<http://www.computel.com/>), Microsoft's three versions of Office have "an aggregate 91 per cent share of the sales installed base, and over 23 million installed users."

Of note, Computer Intelligence also reported, "In Corel, PerfectOffice at last found its owner willing to put some muscle behind it. Corel was able to more than quadruple the number of PerfectOffice users between '95 and '96. Still, it remains a distant competitor, with less than a 10 per cent share of sales users."

The list of vendors who are chasing out office productivity software suites continues to grow. Companies like Netscape Corp. have taken their expertise in building Internet/intranet tools to create a new generation of Web- and Internet-enabled office productivity suites.

"Everybody is sort of coming to the same place from different directions," Carr observed, "One of the most difficult things for people who are making a choice [between various suites] is trying to figure out which way to go. Do you go with a brand new paradigm — an Internet/intranet product — or do you stick with the more established vendors who are Internet/intranet-enabling their products?"

Everyone seems to agree that the single point of access is probably the most significant feature being implemented by office productivity software tool-makers. There don't want to concern themselves with where information is located or what format it's in — they simply



want to have access to it and be able to work with it.

As a result, Web browser-like front ends that provide a single point of access for everything are being incorporated into many office productivity software tools. But interoperability between suites from different vendors is also a growing criterion and it's something that is clearly still lacking. For example, Lotus SmartSuite still can't leverage every feature and function of Microsoft Office 97, and vice-versa. So you buy into a vendor's solution when you purchase office productivity software tools.

"You have to choose a camp and stay in that camp," Carr said. "That's not a problem if everyone in your universe is in that same camp."

Interact layers allow the user to provide a gateway between various products so they can still communicate if you need to, she added. However, there are limits to what can be exchanged. Carr said open document and information containers that provide a neutral format will help address some of these interoperability issues. Using standard communication protocols, like TCP/IP, ultimately can allow any application to access, interpret and use these information containers. "If I can get to you in an unenclosed-up way, if you can receive and interpret my data, then who cares what other proprietary things there are within the application itself? It's the point of transfer you're worried about."

Tom clients are also changing the office productivity software tool landscape. These devices make it easier to create virtual companies, provide geographically dispersed access and help companies extend business beyond corporate walls, Carr said. From the point of view of system managers and administrators, this clients also provide a better means of managing and debugging office productivity applications.

As office productivity software tools increase both in popularity and choices, two important challenges must still be addressed. First, the near overwhelming range of tools contained in many office productivity suites is literally too much of a good thing. Carr agreed, most users don't need all that functionality. "Some of the functions are there simply because they can be. There hasn't been a lot of attention paid to what people really need," she said.

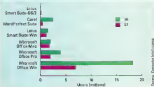
The challenge for many vendors may be in trying to figure out how to provide a generic, all-purpose set of tools that can be all things to all people, without making it too difficult to use for people who only want a limited set of functions.

Vendors must also build office productivity software tools that work like people do, Carr said, explaining that she still uses a paper day-calendar rather than an electronic alternative. "It's an electronic day-calendar going to have to be easier for me to use than the way I do things now," she said. "I have no desire to invest time in setting up an electronic version which I have on my PC. I have my day-calendar with me all the time. I don't have my PC with me all the time."

Knowledge management — functions that provide intuitive and intelligent agent features — built into office productivity software tools are expected to become an important addition to these applications. For example, consider a customer service representative at a bank who is processing a loan application. Using tools linked to a knowledge repository could provide a clearer profile of that client, based on previous information gathered by other bank representatives. An intelligent agent connected to an office productivity application could gather many types of information on clients and consistently suggest options for questions to raise, based on that person's individual profile. "Knowledge I create as I'm using office productivity tools might somehow get automatically captured, catalogued and stored appropriately," Carr explained. "In essence, I can be provided with knowledge in context."

So what's available today in the space of office productivity suites? Here's a snapshot of some of the most popular products.

Suite Share



Microsoft Office 97

Office 97 has been on the market since January. The latest enhancement added to the product are:

Internet capabilities: the ability to add hyperlinks into documents and save those as HTML pages. "You can have multiple people working on a particular document at the same time, you don't have to save multiple copies of the document," said Anne McKinnon, Microsoft Canada's product manager for desktop application products.

An animated character "Office Assistant," built into Office 97, pops up and guides users through various operations. You can query the

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Office Assistant for help using "natural" language commands rather than searching through a cryptic list of help items. "We're doing a lot of work with things like natural language processing. All of that research that gets done in the background brings out the features that you'll see in Office," McKern said. "At Microsoft we do an awful lot of usability and real-life testing. We'll bring people of all levels into our usability labs — people that have never touched a computer before, right up to advanced users."

Enhancements to the natural language capabilities of the product will be featured in a future release of Office, McKern said. Microsoft will look to broaden the tested and, if research indicates a need or demand for a particular feature then "we would definitely incorporate it into the product," she said.

In terms of Office 97 and reseller opportunities, there are limited strictly to sales. Most end-users purchase the product through retail or are sold under licensing programs. For more information, visit: <http://www.microsoft.com>

Lotus eSuite

A lighter-weight and customizable set of productivity applications, eSuite includes a streamlined set of Java-based apps, designed to run on a new generation of thin-client hardware and browser software.

Formerly code-named Kava, eSuite consists of four major components: WordPlace, a simplified user interface, nine Java apps, including a wordprocessor, virtual desk, electronic mail client, calendar and scheduler, a browser, and database access tools. The user interface and nine apps are expected to be available in January.

According to Marc LeBlanc, product manager for Lotus Canada Ltd., eSuite is not a replacement for the larger LotusSmart Office productivity software. The majority of users often only need one or two applications of a total suite package, so eSuite offers a stripped-down, exact-to-use set of tools, he said.

"What's pulling everybody in the network model," LeBlanc said. "We're all going towards it. We're in a connected world now and it's

only going to get more connected. That's a big driving force."

What does this trend demand from office productivity tool vendors? According to LeBlanc, vendors like Lotus must embrace Internet standards and be prepared to build tools that can communicate with other office productivity applications.

As with most software, the best opportunities for eSuite resellers are found in the areas of localization and implementation. "There is a distribution value, but knowing today what the margins are in software distribution, it's not the big opportunity," LeBlanc said. "The big opportunity is going to be developing your own Java apps to work within the eSuite workspace framework. Even better is [using] the eSuite Desktop to customize and varying eSuite apps."

For more information, visit: <http://www.lotus.com>

Corel WordPerfect Suite 8

The latest edition, released in May, offers 32-bit applications and beefed-up collaborative capabilities. In addition to the WordPerfect wordprocessor, QuattroPro spreadsheet, and Presentations application, the most major addition in this new package is CorelConnect, what's described as a personal information manager.

CorelConnect combines calendaring, scheduling, to-do lists, an address book, contact log and a card file. WordPerfect Suite 8 boasts higher integration with Netscape's Communicator.

Other "bonus" applications included in WordPerfect Suite 8 are:

- **Basista** — a Java tool that allows users to publish pages to the Web without complicated programming
- **Photo House 1.1** — a photo editing, touch-up efforts and special effects tool
- **Versions** — archiving software that lets users keep track of document revisions
- **Desktop Application Director** — gives one-click access from the Windows 95 desktop to all the core applications and utilities of Corel WordPerfect Suite 8, and
- **Binary? Viewer** — allows users to view any document published to Binary, whether they have the software paid to create it or not

Among the programs offered by Corel to its WordPerfect Suite 8 resellers are the White Box Program, which allows eligible VARs to bundle Corel WordPerfect software with computer hardware, and OEM Direct, for large OEMs who bundle at least 100 units of Corel OEM software per month.

For more information, visit: <http://ftp.www.corel.com>

Claris ClarisWorks Office

Claris's ClarisWorks Office is described as slim office productivity software designed for small and home offices. It also represents the low-cost end of the office productivity software tool spectrum. Tools provided include a full-featured wordprocessor, spreadsheet, database manager and a basic desktop publisher.

Also included are Web page design tools and Internet access software which allows users to launch into the Internet from ClarisWorks Office itself. There are even development tools for creating a Web site.

The product is sold through a wide reseller network across the United States and Canada. For more information, visit: <http://www.claris.com>

Don McKern is a Toronto-based journalist who specializes in high-tech topics.



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MOTHERBOARDS

You want to build with a firm foundation. What are your best bets?

by Steve Melnick and Tim Bingham-Wells

Perhaps one of the most crucial components of any computer system is the very foundation that houses all its individual components. Indeed, the role of the motherboard is far more important than most customers realize when purchasing a computer system. While it's true that nearly every system vendor will allow the customer to choose the components they wish to put into their system, the motherboard is quite often the one aspect of the system which hardly gets a mention.

Video cards and hard drives are likely to be specified by the customer, while they often neglect things which could very easily determine their overall system performance such as the brand of motherboard and RAM to go along with it.

Why So Important?

So why is it that most customers don't specify the motherboard in their systems? The motherboard is a low-level component which very few people understand, let alone realize its importance. It is also a key area where customers lack the required knowledge, more so than any other system component. Because of this, it might be said if effort was made on the part of the vendors and resellers to try and educate the public on this topic.

It's very possible that one particular piece of hardware inside a computer is simply incompatible with another. When this happens, technicians are known to spend upwards of several hours trying to isolate the source of the problem first before they could begin coming up with a solution. The sad truth is however, that most of these hardware-related problems can be traced back to the

motherboard itself. Because the motherboard is literally the foundation for all other system components, it is absolutely imperative that the board be designed with great care and impeccable engineering to ensure proper compatibility and overall system stability.

Motherboard-related problems were quite common with 486 and early Pentium machines, and while they haven't completely disappeared, they are not as common today as they once were. But the question remains: are there certain brands of motherboards which are more reliable than others?

The answer is absolutely yes. This is why it's important for system vendors and resellers to make their customers aware of the potential problems associated with buying a cheaper, more generic motherboard. In many cases the customer would only have to spend an additional \$50 or \$75 more to get a grade-A motherboard which could very easily mean never returning to the place of purchase for servicing.

All Motherboards Are Not Created Equal

Although there may be a resemblance to some degree, no two motherboards will ever be identical. They may have similar looks and the same features, but one particular brand will always differ from another. It used to be that one brand of motherboard would offer a substantial performance increase over another. Those days could very well be over, as we've seen from our test results this month. The boards we tested were only a small percentage apart from each other in terms of raw performance, and although it may not seem

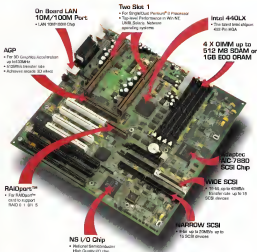
like much, it could mean everything to a customer who is knowledgeable and looking to squeeze every last drop of performance out of their system. Even though the performance gap has narrowed considerably, the gap between onboard features and overall board quality is still very much current. One of the great things about technology is that with the passage of time, nearly everything will get miniaturized at some point or another by some degree. This holds very true for the motherboard industry, where we can see motherboards which contain sound systems built into them, as well as onboard video and SCSI controllers.

Depending on the exact models of these onboard components, it could very easily save both you and your customers several hundred dollars since these components don't have to be purchased separately. Some of the boards we tested this month included built-in sound and one even had an onboard dual Ultra-SCSI controller. Purchased on its own, that same SCSI controller can easily cost upwards of \$150. The interesting thing, however, is that most of the motherboards we tested with such features cost roughly the same amount. Most power-hungry users aren't really interested in onboard video and sound, but give them the chance to have an onboard dual Ultra-SCSI system and they'll be all over it.

When Intel announced the availability of the 440LX chipset, it wasn't long before the first LX boards were on the market. This was a long-awaited technology for the new Pentium II processors, which were available for a number of months before the LX

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chapter. The 440LX chipset contains two major improvements that were not found on the previous FX design, namely the new AGP slot as well as SDRAM support. As far as performance goes, the LX boards tend to offer anywhere from five to 10 per cent increases over their predecessors. At the time of this writing, the 440BX chipset is already in the works, which will offer *among other things*, support for a 100MHz bus, which is currently limited to only 66MHz on the FX and LX boards.

Although the Intel says the LX chipset is designed to operate at 66MHz, several of the boards we tested offer bus speeds of 75MHz, 80MHz and even 100MHz, though don't be surprised if it doesn't quite work as expected. When you get into bus speeds of 100MHz, you're going to have to look at buying some newer, faster SDRAM in the order of 7ns or even 5ns. That's not even getting into the extra strain placed upon your existing PCI cards.

It is also interesting to note that nearly all of the boards we tested provide support for both SIMM and DIMM-style RAM. Depending on the system speed, some consumers will appreciate not having to spend money on new SDRAM when they can still use their current EDO modules. Once again, it should be made clear to our customers that when they deal with high system speeds such as those of Pentium III, they will want to have the fastest RAM possible, ideally 10ns SDRAM or even faster for the higher bus speeds, as mentioned above.

A new trend developing lately is to allow the user to check the current status of various aspects of the motherboard. Nearly all of the boards tested use the LM85 chip to measure things such as the current motherboard temperature, CPU temperature, CPU voltages and fan speeds. Some even give the user the option of configuring alarms in case a fan should stop working, or a temperature value goes too high. These values can either be obtained through the CMOS, or with software written specifically for this task, commonly referred to as a LANtastic Manager. This is a great idea that is long overdue, and should make a lot of testers very content.

The Tests

We asked vendors to send us their latest motherboard based on the 440LX chipset for Pentium II, and 430TX for the Pentium based. Some vendors sent us one of each, while others opted to send us just their new Pentium II boards. To ensure the most accurate results, our tests were conducted using one Quantum 2.1GB hard drive, one Maxtor

Millennium II card with 4MB of VRAM onboard, one 64MB DIMM module (30 ns) and a Pentium II 266MHz processor for the LX boards and a Pentium 233MHz processor for the TX boards.

We tested the boards using three different benchmarking software: *Sysinfo* from Norton Utilities 3.0, Winbench 2.0 and BAPCO System32 v1.0.

The popular Sysinfo program found in the Norton Utilities suite is used to measure the 'overall system performance' and is based mainly on the system's cache and memory throughput.

Winbench performs a number of tests to measure various parts of a system, though we focused primarily on its integer tests. The integer performance tests uses a heap sort algorithm that constantly re-sorts a series of 1000 random numbers (integers). Because all 1000 integers can fit into the L1 cache of a CPU, it tests the processor speed under the best possible conditions. The result is the number of millions of operations performed in one second.

BAPCO's System32 also contains a number of tests that measure different aspects of a system. We used the spreadsheet segment of the program, which performs automated calculations on a number of spreadsheets containing several thousand cells. This test is very CPU intensive and low on disk access, making it an ideal test. Two numbers are reported — one that measures the number of seconds it took the computer to run the automated scripts, and the second is a rating based on that number.

In all of the benchmarks, the higher numbers represent better scores, except for the spreadsheet running time test in the System32 suite, which is measured in seconds. Here, the lower number represents the better score.

It was interesting to note that all of the boards performed quite well, and were within a few percentage points of each other. Overall the fastest Pentium II boards were the ASUS P2137-05 followed by the Aopen AX8L. The fastest Pentium board was the QDI Titanium II, followed closely by the ASUS TX97.

Acknowledgements

We wish to thank QDI for supplying us with the CPU and RAM samples required for this month's motherboard tests.

We also want to thank STD Systems for supplying us with the Intel LX motherboard. Although the board was in its original seal, we were unable to power it on and therefore unable to obtain any benchmarks from it.

Editors' Choice

Performance — Pentium II
ASUS P2137-05
Aopen AX8L



Jan 98

Both of these boards offer excellent performance, support hardware monitoring, and have excellent manuals. The ASUS P2137-05 is a fine CPU board that offers bus speeds of up to 100MHz and has an onboard Adaptec AIC-7880P Ultra Wide controller, as well as Wake-On-LAN support.

The Aopen AX8L offers bus speeds up to 83MHz and offers an additional ISA slot when compared to the ASUS board.

Performance — Pentium
QDI Titanium II
ASUS TX97



Jan 98

The QDI Titanium II managed to outperform its competition, although the ASUS TX97 was a very close second. The QDI board offers several unique features, such as hardware monitoring, a bus speed of 75MHz, and both AT and ATX power connectors.

The ASUS TX97 does not offer bus speeds beyond 66MHz, although it does support hardware monitoring and has an excellent user manual.

Overall Features
QDI Legend IV
Tyan Thunder 2



Jan 98

The boards with the most unique features are the QDI Legend IV and the Tyan Thunder 2.

The QDI Legend IV features an onboard RAID port, and onboard 100Base-T port for instant high-speed networking. Combine that with its SpeedyLink feature which allows you to set the system speed through the BIOS, and you've got yourself a clear winner.

Tyan's latest offering is the Thunder 2. It offers an onboard dual Ultra-SCSI controller — every system administrator's dream, as well as an onboard GPU's Yamaha sound system and Wake-On-LAN support.

Steve McInnis and Tim Roughton-Hicks are Canadian Computer Wholesaler's Lab Test Editors. They can be reached at (416) 535-4494.

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Motherboards Pentium Boards



	Aopen AFST	ASUS TX97	ATI 586T80	Egon P55-BT
Chipset	486TX	486GX	486TX	486TX
Slots	Award	Award	Award	Award
DRAM sockets	2	2	2	2
DRAM sockets	1	1	1	1
Maximum RAM supported	256MB	256MB	256MB	256MB
Bus speeds supported (MHz)	50, 55, 75, 83	50, 55, 75	50, 55	50, 55, 75
PCI slots	4	4	4	4
ISA slots	3	4	2	4
Power supply connector	AT	TX	ATX, AT	ATX, AT
Manual quality	Excellent	Excellent	Very good	Very good
Supports hardware monitoring	Yes	Yes	No	No
Additional features				Keyboard power on
Veritas Symble 3.0	52.13	52.13	51.07	50.00
Whatch Integer speed (Mips/sec)	115.33	115.33	115.33	115.33
IA/PCs Spreadsheet Run time (seconds)	85.17	85.36	85.12	85.00
Rating	300.50	300.00	315.38	300.00
Contact	1-800-365-8738	(909) 399-9251	1-800-255-3133	(714) 840-1177
Manufacturer's Web Site	www.aopen.com.sg/can	www.asus.com/can	www.atiweb.com	www.egon.com
Local Web Site		www.asus.com		www.egon.com
Suggested Retail Price	\$125	\$109.95	\$109.95	
Street Price	\$85		\$75.00	
Retailer Price	\$75		\$59.95	



	ODI Titanium IB	50Y0 3Y-5X85	Sapernova PSMMA90	Tyan Titan S15735
Chipset	486TX	486TX	486TX	486TX
Slots	Award	Award	Award	Award
DRAM sockets	2	2	2	2
DRAM sockets	1	1	1	1
Maximum RAM supported	256MB	256MB	256MB	256MB
Bus speeds supported (MHz)	50, 55, 75, 83, 75	50, 55, 75	50, 55, 75	50, 55, 75, 83
PCI slots	4	4	4	4
ISA slots	3	4	3	3
Power supply connector	ATX, AT	ATX, AT	ATX	ATX
Manual quality	Very good	Very good	Very good	Excellent
Supports hardware monitoring	Yes	Yes	Yes	Yes
Additional features				
Veritas Symble 3.0	51.33	51.33	51.17	52.40
Whatch Integer speed (Mips/sec)	115.87	115.33	115.50	115.33
IA/PCs Spreadsheet Run time (seconds)	84.85	81.81	81.30	85.00
Rating	300.50	295.78	300.50	310.38
Contact	(800) 940-9027	(800) 333-1713	(800) 415-0406	1-800-321-1223
Manufacturer's Web Site	www.odi.com	www.50y0.com	www.sapernova.com	www.tyan.com
Local Web Site	www.odi.com			
Suggested Retail Price				
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Motherboards Pentium II Boards



	Jan. 96	Jan. 96		
	ADIT AB-L95	Aspen AX9L	ASUS P2L97-05	DFI P29LX
				Epos KPS-LA
Chipset	440LX	440LX	440LX	440LX
BIOS	Award 2	Award 2	Award 2	Award 2
Dual Processor support	No	No	Yes	No
DRAM sockets	3	3	4	3
SDRAM sockets	None	None	None	None
Maximum RAM supported	1GB	1GB	512MB	1GB
Bus speeds supported (MHz)	60, 66, 75, 83, 100	60, 66, 75, 83	60, 66, 68, 69, 81, 70, 83, 100	60
PCI slots	4	4	4	4
ISA slots	3	3	2	3
Power supply connector	ATX	ATX	ATX	ATX
Onboard SCSI controller	None	None	Yes (Adaptec)	None
Supports dual SCSI	NA	NA	No	NA
Manual quality	Excellent	Excellent	Excellent	Very good
Supports hardware monitoring	No	No	Yes	Yes
Additional features			Wake on LAN	
Verion Systems 3.0	123.78	123.47	119.82	120.30
Verion				
Integer speed (MIPS/sec)	100.42	100.05	200.17	100.40
DAFCo Spreadsheet				
Run time (seconds)	71.05	71.30	49.11	70.23
Pricing	\$95.00	\$94.00	\$14.00	\$76.00
Contact		800-360-7120	(602) 760-0194	1-800-294-7100
Manufacturer's Web Site	www.adit.com.tw	www.aspentech.com	www.asus.com	www.epos.com
User Web Site			www.asus.com	www.epos.com
Suggested Retail Price			US\$430	
Suggested Retail Price				
Street Price				
Retailer Price				
Notes: Pricing and warranty information will vary by region and distributor.				



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Digitbyte 6A-080LX	Intel AA400LX	Lucky Star 100-LX1	MSI	ODI Legend IV	Shuttle HOT-021	Sage SV-600
440LX	440LX	440LX	440LX	440LX	440LX	440LX
Award	NA	Award	AMI	Award	Award	440LX
No	No	No	No	Yes	No	Award
4	3	3	5	4	4	No
None	None	None	None	None	None	4
512MB	384MB	192	192	112	512MB	None
66		66, 66	66	66	66, 75, 83	612MB
4	4	3	4	4	4	66
3	2	4	3	3	3	3
ATX	ATX	ATX	ATX	ATX	ATX	3
None	None	None	None	ATX-330SP	None	ATX
NA	NA	NA	NA	No	NA	None
NA	Fair	Good	Very good	Very good	NA	NA
Yes	NA	Yes	Yes	Yes	NA	Very good
				Onboard 16MBaudT Real port		Yes
						Works on LAN
129.00		130.00	132.97	131.00	131.37	133.00
135.00		135.37	135.07	135.36	137.90	138.00
79.95		76.00	76.47	79.01	79.10	77.36
371.36		372.50	374.58	372.08	382.00	370.58
	1800-477-0088	1-800-283-2432	1800-946-2600	(800) 946-3827	(800) 943-1400	(818) 220-1771
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		3200				
		3100				

Motherboards Pentium II Boards



	Supernova PROLS	Mycomp TMC TIGRL	Tanaka 6MLX	Tyen Thunder 3	Universal Scientific PNO-373
Chipset	440X	440X	440X	440X	440X
MS	MM	MM	MM	MM	MM
Bus Processor support	Yes	No	No	Yes	No
DRAM sockets	4	4	4	4	3
SDRAM options	None	None	None	None	None
Maximum RAM supported	128MB	128MB	128MB	128MB	128MB
Bus speeds supported (MHz)	60	60	60	60, 66	60, 66
PCI slots	4	3	3	4	4
ISA slots	3	3	3	2	2
Power supply connector	ATX	ATX	ATX	ATX	ATX, AT
Onboard SCSI controller	no/MS-DOS	None	None	ARC-PCPPT	None
Supports dual SCSI	No	No	No	Yes	No
Manual quality	Excellent	Very good	NA	Excellent	Good
Supports hardware monitoring	Yes	Yes	No	Yes	Yes
Additional features		Onboard SCSI		Onboard DPLA Wake on LAN	
Roman Systems \$0	129.00	109.00	123.00	121.00	133.00
Wishah					
Integer speed (MHz/Sec)	100.00	100.00	100.00	100.00	100.00
DAFCA Speed/Min					
Run time (seconds)	10.00	10.00	10.00	10.00	10.00
Rating	100.00	100.00	100.00	100.00	100.00
Contact	(800) 475-0000	(800) 305-1000	(800) 475-0000	(800) 475-0000	(800) 475-0000
Manufacturer's Web Site	www.supernova.com	www.mycomp.com	www.tanaka.com	www.tyen.com	www.usc.com
Local Web Site					www.usc.com
Suggested Retail Price		\$200		\$200	
Street Price		\$200		\$200	
Reseller Price		\$190		\$190	
Note: Pricing and warranty information will vary by region and distributor.					

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The Oldest Secret: Service

More competitive than ever, the computing market requires that resellers excel in their relationships with customers

by Jeff Brown



I get letters. Particularly painful are plaintive letters from very unsatisfied PC end-users, describing PCs that are "dead in the box," useless units, for tech support, slow or no warranty fulfilment, and service wastes of time from non-service-oriented vendors as well as from non-functioning PCs.

To be fair, some of these problems stem from the very nature of PC technology, which has often been fragile, complicated, hard to learn and maintain and sometimes just buggy or unreliable. As well, many end-users are poorly trained, and contribute to their own problems.

To be fair, some of these problems stem from the very nature of PC technology, which has often been fragile, complicated, hard to learn and maintain and sometimes just buggy or unreliable. As well, many end-users are poorly trained, and contribute to their own problems.

Nothing can excuse poor service, however. As the '90s roll to a close, a lot of PC resellers are losing the grace of an increasingly mature, competitive market. Margins are often paper-thin. What used to be precious products are now commodities.

How can a reseller keep existing customers, and attract new ones? Increase their margins? Maintain margins? Upsell customers on extra features and options, and continue to sell to the customer throughout the life of the system sold? Increasingly, the answer to all these questions comes back to a very old concept: know your customers, and love them to death. The competitive nature of business today doesn't mean that there is no margin to provide good service — rather, understanding and meeting the needs of customers is increasingly important to succeed in the information technology marketplace.

The First-Step Case For Quality

There will always be a segment of the market that is extraordinarily price-sensitive, where the no-frills, best-buy product will be able to find buyers. Especially in the mass-market retail chains, the pressure on price is steadily fierce, and the trends to spread even to more upscale VARS and systems integrators.

However, the more a customer needs a reliable information system for their business, the more foolish it is to buy cheaply on price. The best customers are those who have a professional, businesslike approach to buying computing products and services. They are realistic enough, and experienced enough to know that hardware price is only a tiny part of the total cost of ownership of a computing system. They know that their business can be immobilized when their mission-critical computer system is down, and they are realistic enough to prefer reliability and service, even at a somewhat higher price.

business world of the computer age requires "constant, instantaneous communication with and responsiveness to customers." The kind of real-time service can only be provided by organizations that have been deliberately created to listen, respond, and change to meet customer needs.

According to McKenna, computer technology has become embedded in every aspect of business, and to succeed, vendors must use technology to conduct a continuous dialogue with customers. Methods of doing so include traditional marketing, advertising and merchandising techniques, but increasingly involve using the Web, intranets, customer databases, and techniques such as data mining. Once the province of only the largest firms, these techniques are now available to almost any size of business, as the cost and omnipresence of the technology decreases. New forms of maintaining contact with customers are offered by future developments such as

"How can a small to medium-sized reseller afford a customer management system? The solution is not to simply spend, but to spend wisely."

In a recent book, *"Real-Time: Preparing for the Age of the Never-Satisfied Customer"* by consultant/publisher Roger McKenna (McGraw-Hill, NY: ISBN 0-07-0554794-7, \$28.95), the author claims that "in the information age, all businesses will become service businesses." McKenna points to the success, and more interestingly the breakdown, of companies such as Intel, Wal-Mart, and Apple, and concludes that the "Real-Time"

interactive TV and videoconferencing, according to McKenna. McKenna offers an optimistic view of the business potential of real-time, including employing the same computer technologies that you sell. In the future, successful companies will employ technologies that let customers serve themselves much of the time, and which will allow the company to have a virtual "presence" at their customers' locations all the time. McKenna is

not just presenting a private opinion. Firms such as Prolix attribute their success directly to a "People-First Philosophy," which includes both employee and customer satisfaction.

The Harvard Business School Press published a recent book, *Winning: Expanding Markets Through Virtual Communities*,¹¹ which echoes many of McKenna's concepts. Not gain assumes that consumers are getting more savvy about buying on-line, and are becoming ever more demanding of quality and service.

For larger firms such as Canadian multinational Bomstar, Windows NT has already offered a cost effective platform for total customer management software. Bomstar has chosen Days Software Corp.'s Customer Centre program (<http://www.cccs.com>), which runs with Microsoft BackOffice, as a complete solution to promote effective marketing, sales and customer service. Days runs its Windows NT program as being designed for "world-class, customer-focused companies" desiring to "improve marketing effectiveness, shorten sales cycles, improve customer service and exceed customers' expectations by providing marketing, sales, service, and support teams with a single, comprehensive tool for managing, sharing, and viewing all customer information." Customer management software is typically designed to allow servers or mainframe databases to connect with the Internet, mobile computers, and even new mobile "smart" phones and hand-held PCs and electronic organizers.

Bang For The Buck

But, how can a small to medium-sized reseller afford a customer management system? The solution is not to simply spend, but to spend wisely. According to a study by Deloitte and Touche (<http://www.dtc.com>), firms lacking an understanding of how to use technology appropriately risk spend up to 10 times more than firms that buy smart. The bottom line is that, to be successful, no reseller will be able to afford the option of either not spending on customer management, or spending on the wrong system.

Seems to success? They are immediately common sense:

- Keep it simple. Buy fewer, more proven customer management tools.
- Buy off the shelf, rather than custom made.
- Spend money on training, not desktop machinery and hardware.
- Don't automatically outsource: it's often more expensive than learning to do a core business task in-house, particularly when it

involves direct contact with customers.

- Finally, employing customer management technology is not a band-aid that can be posted onto a fundamentally non-service oriented operation. In order to integrate business assistance, mobile and on-line salesforce automation, and service and support, the entire organization must be brought into the new age.

Where To Get Necessary Customer Information

There are a variety of new products that offer sources of information on actual and potential customers. One of the major advantages of big companies with huge IT departments is that they are leveraging their networked server and mainframe technology, which was once mainly used for transaction, billing and inventory tasks, to accumulate information on their customers, through

data warehouses, data mart and data mining systems. This mass of customer data is used with increasing effectiveness for "loyalty management," focused marketing, advertising, direct sales, warranty fulfillment and technical support.

Decision Technology (<http://www.decision.com>, or 1-800-937-9993) offers a free trial copy of its *Decision Survey* program to help with gathering and analyzing customer information.

Environmental Systems Research Institute (ESRI, <http://www.esri.com>, (800) 363-3631) has recently announced its *ArcView Business Analyst*, a software system for site buying markets, site prospecting, customer profiling, time analysis and report generation. ■

Jeff Evans is Associate Editor of Canadian Computer Wholesaler. He can be reached at jeff@nrc.com.

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Building Customer Relationships

A romance is more than sweet talk. Remember the key principles of making and keeping good working relationships as you interact with your potential clients.

by Monte Kerr



What you are about to read should not come as a great shock. If you're still in business, you probably recognize this truth of all truths: the customer is at the core of all marketing programs.

But some people do get too caught up in the process of marketing and forget the ultimate goal. The fact is, you can send out dozens of brochures, or create the best-looking print-of-sale materials, or advertise as much as you want, but if it's not all focused on the customer, it won't do any good. Your success or failure all comes down to that fundamental relationship.

It's not as simple as it sounds. Think of a customer relationship as a marriage. It begins with a courtship, as you try to find out if you belong together. But by the time you discover what you can offer each other, and then decide if you should make a commitment. Long before the vows are made, there is a series of steps that lead to the altar — or to the closing of the deal.

There are three main stages you have to go through to forge a strong relationship:

- Meeting the personal need. As the old saying goes, you never get a second chance to make a first impression. Perceptions formed in the early stages of the relationship are difficult to change. So begin by making sure you know what you want the customer to think of you — develop a set of goals and a marketing plan that ties in closely with your business plan. Make sure all the marketing materials you develop are geared toward achieving that

goal. Be consistent in your messaging — you don't want your intended to think you're fickle. Most of this work must be done before you even meet your customer. Planning and preparation will make you ready for the day when the customer walks through your doors, or makes that phone call to your number. The plan, followed up with high-quality materials, will give you what you need to attract your customer in the first place.

- Getting asked to the dance. Most likely you won't be the only reader the customer is considering. It's a competitive world out there, and even after you have attracted the attention of a potential customer, there's no guarantee that

you are going to make a sale.

At this point, you have to prove that you have what it takes to go the distance. Here's where you let the customer look beyond the façade and see what you really have to offer. Do their needs match what you're selling? Can you tailor your solution to meet the requirements? One of the primary elements that comes into play here is your ability to listen. It's important to really hear what the customer is telling you. Be prepared to be flexible and willing to try something new — sometimes the solution isn't obvious. That's why you're in business. Find an answer that will work for both of you. One other thing to keep in mind: "sell" yourself and make commitments — but never, ever make a promise unless you know you can keep it. You don't want to get a bad reputation, after all.

- Keep the romance alive. Congratulations! You and your customer have signed on the dotted line — you've made the sale and the agreement has been sealed. Don't let it end there. You can't stop working your customer, any more than you can stop maintaining your spouse after the wedding. If you want to maintain a relationship — and, after all, a repeat customer is the best kind — you have to work at it. First of all, do what you said you'd do — meet every single one of the terms of your deal. Then when the project is finished, keep track of your customer.

Stay in touch. Send out regular notices of special promotions. Let your customer know when the software you installed is being upgraded by the vendor. Send a greeting card during the holiday season, just to say thank you. Find your own personal ways of keeping the customer happy, and reminding him or her of the exceptional service you offer.

Like a romance, building customer relationships takes time and effort. But it is one of the most important things you can do. So make sure your greatest information is interesting and focused,

answer all the questions the customer asks and provide the best possible product, and finally, fight a few candles and pour some wine every now and then (metaphorically speaking, of course), to keep the magic alive. ☐

Monte Kerr is a senior consultant with High Road Communications, a public relations agency for high-tech companies. He is based in High Road's Toronto office and can be reached at mkerr@highrd.com.



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PC98 — Where Are We Going?

by Alan Zisman



Once, IBM innovated and everyone else copied.

But those times are long gone. Now, in the chaos that's the computing industry, everybody's got a plan, but nobody knows where we're all going. There seems to be a lack of what IBM chairman and CEO Lou Gerstner referred to as "that vision thing."

While no longer simply "IBM-clones," the vast majority of computers sold today run one or another version of Microsoft Windows on some kind of Intel (or clone) CPU. As a result, Microsoft and Intel, while together are sometimes referred to by industry pundits as "Wintel," have promoted the closest thing to a platform as we're going to find. So it should not be much of a surprise that they've stepped into the power vacuum to try and provide a vision.

For the past couple of years, they've published specifications detailing what they expect of the next year's PCs. Together last October, the two companies collaborated on a set of PC Design Guidelines, with an aim to help the industry "move in sync," as Intel's director of platform marketing, Dan Russell put it, in a recent *InfoWorld* article.

While Intel does not cause logos to manufacturers who meet the specifications (and Russell point that these are "No Intel patents"), Microsoft continues to have a logo program for hardware and software designed to work with Windows. This will be used to help move product development in the directions set out in the PC98 guidelines.

A PC98 machine (which for the first time includes notebooks as well as desktops) will feature at a minimum:

- a 33MHz MMX Pentium or compatible processor (desktop), 166MHz (notebook),
- 32MB of RAM (desktops), 24 megs (notebooks),
- 256KB of cache RAM,
- Universal Serial Bus (USB), IEEE 1394 (Firewire), or PC-Card ports, with hot-swapping capabilities. Notebooks require USB, 39-pin CardBus, and infrared ports, with IEEE 1394 on a docking station,

- USB and IEEE 1394 device hubs, and,
- Year 2000 and beyond BIOS-level support. Notebooks will need to support Advanced Configuration Power Interface (ACPI), for power management that can be better controlled by future operating systems — specifically Windows 98 and NT 5.0. Current Advanced Power Management (APM) needs to be set at the system BIOS level, permitting only manual configuration by the operating system.

The specifications recommend changes to speed up boot time, for example, an end to the power-on, video memory test, and a miniaturized memory test, meant just to establish the size of the system memory. Tests of parallel and serial ports, and floppy and hard drive tests at boot-up would also be eliminated, as part of a move towards eventually making PCs instant-on like a TV or stereo — what Microsoft has referred to as On/Off support.

Machines designed as workstations have additional requirements, such as a minimum of 4MB of video RAM, and a separate L2 cache for each CPU in multi-processor systems. These machines should also support ECC memory and 64-bit physical memory addressing. Mini-notebooks are also mentioned as needing at least 16MB RAM, a Pentium III MMX CPU, and at least 640 by 480 video.

Perhaps more consequential is the move to eliminate the venerable ISA bus. This 16-bit expansion slot standard was first used on 1984's IBM AT, and has survived attempts to replace it with IBM's Microchannel, EISA, and VLB-Local Bus. These alternatives are mostly memories, but the ISA bus continues on today's machines, along with PCI slots. The continued survival of legacy ISA components, however, is the biggest reason that Plug and Play on today's machines so often means resembles Plug and Play.

Still, Microsoft and Intel don't think that manufacturers are quite ready yet to bite the bullet and completely eliminate the ISA bus. As a result, inclusion of the ISA bus is an option for P98, but it's widely expected that support for this classic but outdated piece of technology will be removed from the PC99 spec. It's hoped that by then, higher performance USB and Firewire peripherals will be

common, and that ISA devices will no longer be needed or wanted in new systems.

As part of the move to USB and Firewire, expect to see external device hubs, so that devices that are typically added only by removing the PC's case and fiddling inside, will simply be plugged into an external bay. Compag showed off such a system at November's Comdex, with two bays in the front of the PC's case, which allowed fast and easy installation of DVD, CD-ROM, hard drives and more.

Operating system-wide support for these proposed changes can be expected next year with the release of Windows 98 and NT 5.0. In the meantime, Windows 95 SR2.1 includes USB support, with device drivers being written by peripheral manufacturers.

Six months after Intel introduced the Pentium II, redesigning motherboards in the process, there's increasing evidence that the Pentium III's Slot 1 may not provide much of a performance increase over earlier system designs. Customers are noticing that higher-priced P-II systems seem to be providing only a small performance gain over more affordable Pentium or clone Windows 95 systems. Similarly, important tests found a maximal five per cent performance increase comparing up of the line 300MHz Pentium II systems to less expensive 266MHz systems.

The result, for Intel, has been lower than expected sales of Pentium II, followed by price cuts. (Note: 233MHz and 266MHz Pentium II currently offer a good price/performance ratio.) Intel's response is to "just wait for Slot 2" — the next generation where, presumably a will be done right. Slot 2, however, will be initially limited to workstations and servers. In addition, it's expected that in 1998, Intel will be playing on current Socket 7 MMX Pentium CPUs as favor of a new Pentium II design lacking the current model's L2 cache RAM on the card. The result will be sold at a lower price, but offering lower performance. On the high end, expect to see 400MHz Pentium II models sometime around February '99.

Alan Zisman is a computer journalist and author living in Vancouver. He can be reached at azisman@compuserve.com.



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Should You Buy Or Lease Your Business Vehicle?

by Douglas Gray



At this time of year, many small-business owners are considering a new vehicle for their businesses. The most common question asked is "Is it more advantageous to lease or to buy a vehicle?"

Revenue Canada has considered each option and has established rules to ensure that one option has little if any benefit over the other. The decision is therefore based on your situation and needs and cash flow considerations.



Whatever decision you make, make sure you thoroughly compare shop and sleep on it before you make any final decision, sign documents and take the car home. You want to make a decision based on sound logic and not emotion or sales pitch by the car company. Compare the cost of each approach over the term you expect to own the vehicle.

The lease contract sets out the contractual nature of the deal. Any representations that the sales rep makes to you that are not contained in the lease contract, you can't rely on. So make sure that any statements made to you to induce you to lease the vehicle are written into the contract.

Advantages And Disadvantages Of Buying

- You own the vehicle and therefore do not have any restrictions on use.
 - You are building up potential equity in the vehicle, for example, the value of the vehicle less the debt you have paid off.
 - You can use the vehicle as security to borrow money.
 - You can sell the vehicle and you keep the money, after any loans or paid off.
- If you are using the car as a business vehicle, there are additional benefits:
- Depreciation is a deductible. For cars, it is 30 per cent a year on the declining balance. However, only a maximum of \$25,000 (plus taxes) is accepted as the capital cost of the vehicle, no matter how much more you pay

+ interest on money that you borrow for the car purchase is deductible, however, there is a maximum of \$100 a month, no matter how much more than that you pay.

Disadvantages:

- If you are using the car as a business vehicle:
- You cannot deduct the full cost immediately. Only the first \$25,000 plus taxes may be capitalized and depreciated for tax purposes, and the car you want or need might cost more than that.
- Only a maximum of \$100/month for interest is accepted by Revenue Canada. You pay your own repairs and maintenance expenses.
- Time and effort is required to sell the vehicle.

The Advantages And Disadvantages Of Leasing

- You can change to a new vehicle relatively easily.
- There are more consistent and predictable cash flow requirements.
- If you are using the car as a business vehicle, it fixes up cash flow as monthly payments are generally less than loan payments when financing the purchase of a car.
- Lease payments are deductible, subject to limits set out by the Income Tax Act. At present, it is \$650/month.

Disadvantages:

- You don't own the vehicle.
- You are not building up equity in the vehicle.
- You are basically renting the vehicle for a certain time period.
- There could be restrictions on your use of the vehicle, for example, outside the province or country.
- Lease costs are slightly higher than purchase costs.
- Leasing expenses can be subject to increases. Costs could include financing, administration and other fees.
- You are responsible for maintaining the vehicle, according to the maintenance schedule set out by the leasing company. This could cost you more money than if you had the freedom to do what you wanted, where

- and when you wanted, as in a buy situation.
- There are many restrictions and limitations set out in the lease, that affect your use and enjoyment of the vehicle.
- You could be paying more money for greater mileage use, wear and tear and guarantee of residual value at the end of the use, or penalties if you want to terminate the lease early.
- If you are using the car for business purposes, Depreciation is not deductible on operating leases.

For further information, you can pick up a free consumer booklet on vehicle leasing published by the Canadian Automobile Dealers Association and others. It is called "Turning The Tables On Leasing." You can also purchase a Canadian buy versus lease software program that customizes the pros and cons in specific situations. One such pro-



gram is called "The Car Calculator," published by Grampoint, (1-800-647-5653 or <http://www.carcalculator.com>).

Also check with your provincial consumer services department for brochures and any legislative lease protections for consumers that might be available. Finally, speak to your professional accountant about the tax implications in your specific situation. ☐

Douglas Gray, LL.B., has had extensive experience as a lawyer specializing in small business. He is also a speaker and author of 13 best-selling business books, as well as investment software programs. His books include Home Inc.: The Canadian Home-Bound Business Guide; The Complete Canadian Small Business Guide (both by McGraw-Hill Irwin); and Start and Run a Profitable Consulting Business and Marketing Your Product (both by Self-Counsel Press).

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No simple cure for slowing sales

by *Graeme Barnett*



At a recent meeting of the Western Canada Computer Distributors Society, I asked some attendees how their sales were, compared to last year. The general consensus was gloomy — sales were down about 10 per cent on average, reported more than one distributor.

Those inclined toward gloomy predictions are now wondering whether this is the long-fetted still of the computer market dynamic that has plagued manufacturers nearly undisturbed over the last three years. However, there are signs to the contrary, too. Market researcher Gartner, in a Dec. 1997 report, predicts that sales of personal computers will grow 10 per cent in the coming months as a result of the downward price pressure that now fuels sales of inexpensive personal computers opening the market to more new users than ever before. Indeed, as manufacturers push toward the US\$400 price-point for an entry-level system, the presumed price advantage of network computers is in considerable doubt.

Also, Statistics Canada recently found that Internet use doubled in Canada in the period from 1996 to 1997. At this point, says StatCan, over 35 per cent of the population is on-line. Some industry observers see this as an important factor that will determine the next period of economic growth.

In a compelling essay entitled "Focusing on the Great Fracture" (a metaphorical allusion to *Jaws* and the *Great Peril*, a children's book by Roald Dahl), George Gilmer states that "In every industrial transformation, businesses prosper by using the defining abundance of their era to alter the defining scarcity." Gilmer defines the modern consumer's true time as the irreducible scarcity.

For all this abstruse sense of the most precious resource, says Gilmer, the remedy is the "Net. Businesses must use its defining abundance — MIPS, bits and gigabyte — to reduce the needed variety of time. In practical terms, that is the promise of the Internet — a new global economy based on bandwidth abundance. For more details and an index of communication-related articles by George Gilmer, visit <http://www.computerworld.com/Articles/gilmer.html>

Naturally, there is no simple cure-all that will jumpstart sales. However, there are a number of important developments that are poised to define how the next generation of technology buyers will purchase and use their products. Most obviously, the transition now underway to the Pentium II and LX motherboard architecture (and its accessories) will define the bulk of new system purchases in the near term. Because the software that drives the advantage isn't yet in place, only the early adopters are already on board, but the mass market is only about six months behind.

Indeed, the notion of "looking six months into the future" is a useful exercise for those who must maintain a practical sense of marketability for their products and services. It's no good to be too far ahead of the curve, nor too far behind. ☐

Graeme Barnett is the Senior Editor of The Computer Paper and a former computer vendor. He can be reached at grbarnett@comp.ca. He will deliver a session at Canada/Pacific this month entitled A Windows Roadmap for the Enterprise: 95, NT and Beyond.

Here are the trends that will be pivotal to defining sales over the next twelve months:

Q1

Early adopters will embrace LX motherboards, in preparation for Windows 98 and/or NT 5.0. Sales of Pentium II systems using the new motherboards and system components such as Ultra IDE drives, SDRAM and AGP graphics cards will increase as Q2 approaches.

As the 386 model standard is refined, sales of these products will erode, but expect deletion from cable systems and SDL services.

Q2

Optimists that we are, we expect the release of Windows 98 around the middle of the year, despite the U.S. Department of Justice's Dec. '97 injunction disallowing Microsoft from forcing manufacturers to bundle its Internet browser as part of their license of Windows 95 or its successors. Our interpretation of the wording of the injunction suggests that it is unlikely in such a way that Microsoft is almost certain to be able to win an appeal or at least work around the vaguely phrased requirements of compliance.



























With or without Internet Explorer integration functions activated by default, Windows 95a Edition set is likely to make it a big seller. We've been testing the Nov. 21 pre-release version (beta 3) of Windows 98 here at CCW, and it's shaping up very nicely, with compelling features that range from automatic Windows updates via the Internet to an strong TV integration and integral support for scanners from Hewlett-Packard, Umax and other manufacturers. Some features, such as AGP and USB, are certain to encourage new system purchases as NT 5.0 begins to emerge as near-final form. AGP power management functions, for example, require systems based on LX motherboards and their accessories and, as many vendors are likely aware, such motherboards require all-new cases and present a strong impediment for the market to invest in all-new Synchrotron Dynamic RAM, as well. Other features like DVD, Firewire and TV support, are likely to result in strong sales of the supporting multimedia hardware such as video cards offering hardware support of 3D acceleration via Direct3D and sound cards capable of delivering hardware support for DirectSound APIs Q3 and Q4.

The market for DVD — especially the recordable and re-recordable varieties that hold so much promise in the computer industry — must settle down from the chaotic state it is currently in, if PC-based DVD sales are to take off. For the second, I'm betting on the Sony/Philips-endorsed DVD-RW standard.

To help you make sense of current market conditions, I have a page of relevant and valuable technologies such as DVD and PCS posted at <http://ftp.compulink.net>

The lesson is all of this is to be aware of the technologies that will drive the decisions that your customers will be facing during the coming months.

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Book Helps Prepare For Microsoft Certification

by Stephen Barak

Title: MCSE Training Guide: Windows 95

Authors: Michael Wolfe, Bob Tidrow, Joe Casad

Publisher: New Riders

ISBN: 1-56305-746-4

Content: 760 pages with enclosed CD-ROM

Level: Intermediate to Advanced

Cost: \$84.95

Description: One of a series of titles from New Riders providing Microsoft-approved, comprehensive training for Microsoft Certified Systems Engineer (MCSE) exams.

Rating: A — Recommended for network consultants and resellers.

There is a severe shortage of Microsoft Certified Professionals (MCPs), so certification is a hot ticket today. In the second annual MCP Magazine survey, it was reported that the average MCSE earns US\$78,700. That is a powerful incentive for you and your customers to become industry-certified.

So, the question arises, which is the best route to take? Currently, there are three major choices: use an approved self-study guide, work through computer-based coursework, or take a Microsoft-certified course. Each has their advantages, but one glaring flaw is self-study due to the low cost. This trend clearly shows in the recent MCP survey — 91 per cent are using books as a preparation method with 98 per cent indicating some sort of self-study as a preparation method.

Which books would you choose for yourself or your customer? What should you look for? The answers are surprisingly simple. Choose a Microsoft-approved guide, written by experienced experts who have proven writing ability. Within the guide itself, look for plenty of proven questions, and additional background material outside of the topic area plus exam simulations. In addition, look for time-saving tips, and real-world examples.

New Riders' MCSE Training Guide Windows 95, is an excellent network consultant's handbook/reference and manual. However, it doesn't stop there. It is also a superb study guide for Microsoft's "Implementing and Supporting Windows 95" MCSE exam. Microsoft exams test specific objectives that your customers can find at Microsoft's web site. Here lies a challenge: The exams also include material outside the objectives to test the general background of the candidate. This book meets the challenge by including a considerable amount of additional material that will prove useful in the real world.

The authors bring plenty of experience to the book. Bob Tidrow has written more than 20 books including seven on Windows 95. Joe Casad is former managing editor of *Network Administrator Magazine*. Michael Wolfe works for Chevron and holds both a Novell Master CNE and Microsoft MCSE. This experience is evident in the clear writing and thorough coverage. The book contains numerous tips and explanatory notes that are very useful to novice and expert network consultants.

What sets this book apart from others? There is a handy five-page pull-out listing all the exam objectives and their location in the book.

Each chapter begins with test questions to help your customers determine the amount of study time they should spend. For example, Chapter One Planning and Installation, contains 19 questions and 30 review questions. The CD is particularly useful with TestPrep —

New Riders test engine that simulates the actual test, an electronic flash card system to help in the study process, an electronic version of the book and samples of major commercial test-prep engines. To protect your customers against rapid changes, the Web addresses point to the latest exam objectives and certification requirements.

After finishing the book, your customers will understand how to configure and install Windows 95 client services in a NetWare environment, know the limitations of network client services, how to migrate from other operating systems, and perform Registry troubleshooting. They will feel comfortable with the Desktop, Taskbar, Start menu, configuring property sheets, designing and implementing profiles. In addition, they will know how to manage disk resources using system tools, configure and install drivers, resolve GPFs, and troubleshoot the Device Manager to configure Plug and Play components.

The book delves into the subject matter with twelve chapters and four appendices. The topics include:

- Planning and Installation,
- Architecture and Memory,
- Customizing and Configuring Windows 95,
- Editing User and System Profiles,
- Networking and Interoperability,
- Managing Disk Resources and Utilities,
- Managing Printers,
- Managing Applications,
- Mobile Services,
- Microsoft Exchange,
- Plug and Play,
- Troubleshooting,
- Appendix A: Overview of the Certification Process,
- Appendix B: Study Tips,
- Appendix C: What's on the CD-ROM, and
- Appendix D: All About TestPrep.

In summary, the book is an all-in-one, Microsoft-approved study tool that would be useful to your customers for exam preparation and as a real-world operating system reference. There are numerous real-world examples, and tips for working with Windows 95. I highly recommend this one-of-a-kind resource for all VARs, network administrators, resellers, consultants, or students of networking. For those interested in Windows NT, I recommend New Riders' MCSE Training Guide, Windows NT Server 4. ISBN 1-56305-768-5. ☐



Stephen Barak, MSP, is a lecturer, writer, advisor and co-convenor for the BAHM Computing Program at Capleton College, which has won a number of international, national and provincial awards. He is Novell NEAP and Microsoft AACP-certified and can be reached at astair@compulife.co.nz.



Sharp adds keyboardless Pen E-mail device

Sharp has introduced a pen-based handheld E-mail/gateway device with a supported list of US\$299. The new Sharp SE-500 is optimized to keep mobile professionals up-to-date with current E-mail and contact manager or Personal Information Management (PIM) data. E-mail and some PIM synchronization software is included with the base unit. Option selection and text entry is done with a stylus or user's finger touch, and an on-screen keyboard.

The SE-500 has an integral 14.4 Kbps modem, an IRDA port for printing and file transfer, and a 240 by 129 backlit screen. The SE-500 also comes with its own docking station. See <http://www.sharp.ca/enr>

Seagate ships Crystal Info 6

(NB) — Seagate Software, a unit of Seagate Technology Inc., has announced that its Crystal Info 6 business intelligence software is now shipping.

Crystal Info 6, formerly known by the code name Black Widow, incorporates hybrid on-line analytical processing (OLAP) and Channel Push technology. Matt Dren, Seagate Software's product strategist, said in a teleconference with reporters that Crystal Info is the first business intelligence product to provide both traditional OLAP and multidimensional OLAP capabilities — a combination that research firm Gartner Group Inc. has dubbed Hybrid OLAP (HOLAP).

Spindrive Corp. of Toronto, has launched Motor/MR, another HOLAP product.

A key new capability in Crystal Info 6 is its support of push technology, including standards being pushed by both Microsoft Corp. and Netscape Communications Corp. to make business intelligence information available via the Web or an intranet.

Seagate Crystal Info 6 starts at US\$299 per client license. Reporting and query capability comes in an add-in module that costs another US\$199 per user. Another module contains the OLAP capability, for US\$149 per user. See <http://www.seagatesoftware.com>

Microsoft delivers Internet financial technology kit

(NB) — Microsoft Corp. has announced Microsoft Internet Finance Server Toolkit (MIFST) for banks and financial institutions. The new toolkit provides companies with the necessary technologies operating behind Web features customers normally see and navigate.

While viewing a Web site of a bank, brokerage house or other financial institution, customers use a graphical interface and enter commands; they do not see MIFST. The US\$9999 product is a platform upon which a bank builds a navigable Web site. "MIFST is a platform and toolkit which allows a com-

pany to have a single package for processing bill paying, checking account transactions, transfers of funds and other banking and brokerage data," said a Microsoft spokesperson.

Different elements of MIFST address data integrity and scalability concerns associated with building an on-line financial services site. The product requires Windows NT Server 4.0 and Microsoft SQL Server 6.5 and interoperates with all elements of the Microsoft BackOffice platform.

Security is backed by support for 128-bit encryption.

See <http://www.microsoft.com>.

CanTax adds CD-ROM tax tutor based multimedia

Calgary's CanTax and the Jaxco Institute, of Winnipeg, have launched an interactive, multimedia version of The Canadian Tax Tutor on CD-ROM, which features the tax trainer Evelyn Jaxco.

It combines tax training and tax planning, and Gerry Kalanick, chief operating officer of CanTax, says the company is looking to expand both the selling sector and the tax planning

sector, with this product. "By taking a number of sample tax planning steps during the year, you can see a significant effect on your tax return."

Suggested retail price for The Canadian Tax Tutor is \$49.95, and that price includes the final filing version of CanTax 88.

Among its customer base, CanTax numbers about 7,500 tax preparation services and more than 40,000 individual taxpayers. See <http://www.cantax.com>



NEC debuts full-keyboard MobilPro 700 handheld CE system

In announcing a new, second generation Windows CE device with greatly enhanced functionality over its first offerings on the CE platform, NEC is answering user demands for improved handheld PCs using the Microsoft CE operating system. The MobilPro 700 offers the first true "touch-typing" keyboard on a handheld CE device, according to NEC Computer Systems Division. With a weight of under 1.5 pounds, the MobilPro CE is much more productive for data entry, featuring a 7.3-inch backlit touch-screen, a 30 MBops internal modem, an IRDA port for easy file transfer, color VGA output for business presentations, voice recording capability, and a compact flash memory and Type II PC Card (PCMCIA) slot for easy upgrading. The MobilPro offers up to 25 hours of battery life on two AA alkaline batteries, and is optimized for Windows CE 2.0.

According to Gordon Neff, manager of system products for NEC C&D Canada. "Our customer research has demonstrated that

mobile professionals most often require Internet and E-mail access, word processing and PowerPoint functionality while away from their desks. The added functionality and features of the MobilPro 700 bring out the best in Windows CE 2.0. This combination delivers true mobility, unlike anything else in the market."

Software includes MicroBurst Virtual Courier for mobile e-mail or MSN and users, Symantec PCAnywhere, for remote access and synchronization, Puma Intelliproc, for Personal Information Manager (PIM) synchronization, Microsoft Professional, for mobile faxing, NEC QuickNotes, an electronic handwriting notepad, and CompuServe Spotlight, for accessing CompuServe via the MobilPro.

NEC says it is working on delivering a color screen version.

The MobilPro 700 is available now, for a street price of about \$999. See <http://www.nec.com>

Brother adds MFC-7000FC

Brother International has just released the MFC-7000FC multifunction device, a product that handles color scanning, printing, and copying, faxing, color faxing, message boxes, and voice output and print. The MFC-7000FC is aimed at the SOHO market, where an all-in-one peripheral is needed for consumer, education or business imaging, communications and printing.

The MFC-7000FC scans at up to 1,200 by 1,200 dpi (with interpolation), is either 24-bit (16.7 million color palette) true color or eight-bit (256 shades) grayscale. It can make copies at reductions of up to 50 per cent, or enlargements up to 200 per cent, and print in color or black and white at up to 720 by 720 dpi resolution. The plain paper fax feature operates at up to 34.4Kbps, and has advanced features such as fax-to-faxphone search, Caller ID, distinctive ring detection, and simultaneous faxing/printing capability.

The Integrated Message Center can store up to 30 minutes of digital messages in its mailbox with full duplex, speaker phone option, fax forwarding and paging, remote fax retrieval. Contact <http://www.brother.com> or (514) 685-0606.

Digital Persona has U.are.U fingerprint recognition

One of the latest entries into the field of computer "biometrics" (computer technology that gets information from measurement of human biological functions or characteristics) is the U.are.U fingerprint identification system from Redwood City, Calif.-based Digital Persona.

The U.are.U product is a hardware device that attaches to a PC to allow users to gain access to computer systems and data through the use of their personal fingerprints. U.are.U consists of a small fingerprint scanner that attaches to a PC via a Universal Serial Bus (USB) port, and software which allows a user to input his or her fingerprint as a "password" to a secured PC. In addition to the finger scanning feature, the U.are.U software also offers a security screen saver, which blanks the screen after a period of inactivity, and only allows information to be displayed again if the user re-scans his or her finger. This is aimed at dealing with the

problem of unauthorized access to a computerized PC.

The U.are.U system comes to market at a time when fingerprint scanners seem to be rapidly proliferating. The world leader in this category, the BioMetric from Ottawa-based American Biometrics, established the low-cost fingerprint scanning product category, and a competing product from Sony has been announced. Other biometric security systems, based on vein print, face recognition, and eyeball or hand scanning, have not found a ready market, due to problems of cost and reliability. Digital Persona claims that the U.are.U system can itself spare from the competition through its low cost (US\$499), ease of installation, intelligent recognition of poor quality or masked fingerprints, and unique screen saver feature.

Contact <http://www.digitalspersona.com> or (650) 281-6070.



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Protec WebShare Models offer speedier access

Protec-Clair Corp. based Fram, Minnesota, Inc. has released two new upgrades to its popular WebShare product, a hardware device that allows up to three PCs to share a single IP address and Internet account.

According to Blaine Norve, marketing manager for Protec, "Small organizations have embraced the WebShare concept because it bears a high cost of multiple Internet access, and now with this new release supporting higher speed modems, users can be even more productive."

The second new version of the product, which relies on a user supplied external modem, is especially suited to expanding capabilities through higher speed modems. Protec for WebShare began at US\$238.

Protec has also unveiled a new small office networking solution named SOHOLink, which is claimed to be "the all-in-one Network Hardware Suite for small offices and home offices." SOHOLink is based on a compact Ethernet HBase-T hub that can connect up to six PCs in a local network, sharing printer, fax/modem and Internet resources. The network can be expanded beyond five users by attaching the sixth port on the main hub to a second SOHOLink hub. Contact <http://www.protec.ca> or 1-800-367-8156.

Tally introduces fast impact T6180 printer

Tally Printer Corp. is shipping the T6180, a printer which Tally claims is the fastest line impact printer in the world. While the mainstream computer world has moved away from the once-popular impact printer format in favor of laser and inkjet, there remains a sizable and lucrative market for impact printing in high-end specialized applications.

The Tally T6180 is capable of printing 1,800 lines-per-minute. It incorporates some ingenious new technology to achieve its higher performance, including a proprietary print controller which intelligently arranges page into segments prior to printing, the ability to print text and graphics in one pass, paper jam reducing sense control, and real-time monitoring of hardware temperature and performance. The T6180 has a suggested retail price of \$12,999. Contact <http://www.tally.com> or (423) 231-3334. ■



Sue Miller

Compaq Canada president resigns

After just a half year on the job, Sue Miller has resigned as president and managing director of Compaq Canada Inc.

In December, the company said Miller had resigned "to pursue other interests, effective immediately."

Dea Westerman, vice-president, government and education sales, North America Division, Compaq Computer Corp., has been appointed acting president of Compaq Canada Inc. by Ben Schmidt, vice-president and general manager, North America Division, Compaq Computer Corp., until a permanent successor is named.

Digital Sound names VP marketing

(NR) — Digital Sound Corp. has appointed Pamela J. Thompson as vice-president of marketing. Thompson will be responsible for developing a worldwide market strategy and will manage product marketing, channel marketing, and communications programs.

Thompson was eight years at Motorola Inc., where she was most recently the director of strategic business, responsible for developing and implementing wireless content "solutions" for paying carriers around the globe.

Thompson was previously managing director for Motorola AirCommunications Ltd. She also held other senior management positions at Motorola, including vice-president and director of Asia Pacific wireless data growth operations and manager of corporate strategy.

Corel's VP joins Pictorius

Multi-award Web development tools vendor Pictorius Inc. has announced Mark Albrecht-Tyler — former vice-president of sales for Corel Corp., has joined the company as vice-president, sales and marketing.

During more than five years with Corel, he played a key role in building and directing Corel's sales force in North America, Europe, Asia and the Pacific Rim, says Potolach.

"Pictorius has definitely positioned itself as a leader in the web development market, a market that is taking off worldwide as businesses discover the power of the Internet as a vehicle to publish information and deploy applications," said Albrecht-Tyler, in a statement. He joins a management team led by president and CEO Jesse Houston.

Stentor council gets chairman

The Stentor Alliance Council of CEOs has announced the appointment of Colin Latham as chairman. He succeeds Brian Canfield, who stepped down as CEO of BC Telecom.

Latham is president and CEO of Maritime Tel & Tel and chairman of the board for The Island Telephone Company Ltd. and MT&T Mobility Inc. He is an expert by training, and has gained extensive experience in business services, sales and marketing during his 25-year career.

The Council of CEOs provides overall strategy direction for the Stentor Alliance in matters of national service development, policy, regulatory affairs, and technology. The members of the alliance are: BC TEL, Bell Canada, Miled Tel, Manitoba Telecom Services, Maritime Tel & Tel, MTTEL, NewTel Communications, NorthwestTel, QuébecTel, SaskTel and Telus.

Latham is a member of the Association of Professional Engineers of Nova Scotia and a Fellow of the Canadian Academy of Engineering. He also serves on the Boards of Directors for the Nova Scotia College of Art and Design, the Greater Halifax Partnership and FaxLane Technologies Inc. — JS

CALENDAR

Jan. 6-8 MacWorld Expo San Francisco '98
San Francisco

<http://www.macworldexpo.com/mac98/index.html>

Jan. 20-22 Canada/Pacific '98

Vancouver

<http://www.condex.com>

Feb. 1 Computer Plus Market

Toronto

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Call: (905) 877-8025

Feb. 3-8 Internet World Canada '98

Toronto

Call: 1-800-452-9537

<http://www.canada.internet.com>

Feb. 10-12 Internet Expo

San Jose, Calif.

http://www.intl.com/rochester/inter_net/

Feb. 10-11 Computerfest (Western) & Mac Expo '98

Toronto

Call: (416) 925-0534

Fax: (416) 925-7791

E-mail: charter@compfest.com

Feb. 10-20, 1998 The Second Annual Mobile & PDA Expo

San Francisco

Call: (415) 251-0000

<http://www.pda-expo.com>

March 2-4 The Enterprise Resource Planning Summit

Chicago

<http://www.dci.com/erp/>

March 23-27 Canada/Enterprise '98

San Francisco

<http://www.penton.com>

May 14-22 CFI Expo

Toronto

<http://www.fairtrade.ca>

Do you have news?

If there are personnel or other noteworthy changes at your company, drop us a line at csw@tsp.ca.



Do you have an upcoming event you'd like to get listed in CCA's Calendar? E-mail: calendar@cca.com

Nifty Numbers

Digital PCS Will Have One Million Canadian Subscribers in '98, Says New Study

Rubiocon, Our brand market research firm Evans Research Corp. says the PCS market will attract more than one million subscribers before the end of 1998 in a report recently called *The Emerging Markets: Personal Communications Services*.

ERC predicts the PCS market will soar as a direct result of the associated benefits of digital cellular technology, including improved sound quality, enhanced security, and an increasingly low price. The phones also support call forwarding, call waiting, caller ID, conference calling, text messaging, higher throughput speeds with reliable connections and longer battery life.

The research firm stresses increased security as one of the most important features of PCS. While traditional cellular phone calls are fairly easy to listen in on, with PCS digital networks transmit data in encrypted code, which changes throughout the call, which

reportedly makes it extremely difficult to breach security, says Evans.

Evans says Bell Mobility (the largest shareholder of the Mobility Canada consortium) and Rogers Canal lead the Canadian PCS market.

By the end of 1997, Rogers Canal Inc. was expected to service more than 80 per cent of the Canadian population. ERC estimated that Bell Mobility's potential coverage encompassed more than half the population of Ontario and Quebec.

Evans noted that applications currently under development include push-pull content delivery to news on-line transactions and allow information to be delivered to the sub-

scriber's phone. And more competing functions are being integrated to support E-mail, fax and Web browsing. ■■

Contact Evans Research Corp., at (416) 621-8514, ext. 218.

% of Self-Employed PC Users with Other Products/Services

Products/Services	% Using
Cellular phones	56%
Multiple phone lines	44%
Internet access	43%
Fax machines	42%
Pagers	33%
Data/fax lines	28%
Copier	23%

Source: Evans Research Corp.

Reader Poll

Last issue, we asked:

What impact is Electronic Commerce having on your revenues?

You said:

50% I attribute revenue increases directly to Electronic Commerce

38% I don't see any measurable effect on my business revenues, due to Electronic Commerce

17% Electronic Commerce, with the additional competition it brings, is having a negative effect on my business

This Issue:

Over the last year, cable companies like Rogers Cablevision, and increases of its Wave Internet service have been riding out high-speed Net access via cable systems. By the end of the 1997, 110,000 North American customers were expected to be using cable modems to access the Internet, and one recent study

Our question to you:

How popular will cable modems be in 1998 with your computing customers?

Please indicate which most closely reflects your view:

- ☐ Customers are eagerly investigating cable modems, attracted by the high potential speeds of the technology. Interest will be high in 1998.
- ☐ People are interested in cable technology for Internet access, but are mostly taking a wait-and-see approach. Interest will be moderate in 1998.
- ☐ Customers are comfortable with the traditional telephone-based Internet services, and are hesitant to invest in the cable modem alternative. Interest will stay relatively low in 1998.

For more information on this and other topics, visit our Web site at <http://www.ccwsmag.com>, or send your responses and comments, by fax, to:



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NSTL PC Digest, September 1997

Best Buy - PC Portables

"The Sceptre Soundx 4500 is an impressive machine..."



"Sceptre is selling this computer [166 MHz Pentium® processor with MMX™ Technology, 12.1-inch TFT SVGA display, 2.1 GB HDD] with 40 MB of RAM - for just under \$2,900, which puts it well within the reach of many. This configuration deserves our "Best Buy" rating for the value represented."

PC Portables, November 1997

In head to head comparisons against the likes of Compaq, Hewlett-Packard, Gateway 2000, Micron and Hitachi, to name a few, Sceptre's Soundx notebooks have proven themselves the best. Call now for a distributor near you or check out our web-site for more information.



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